SERVICE MANUAL

QUARTZ SYNTHESIZER COMPU-RECEIVER

SANSUI Z-9000X/7000X

CAUTION

1. Use only replacement parts recommended by the manufacturer.
2. Measure insulation resistance before returning the appliance to the customer to prevent electrical shock.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Audio section

Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.005% total harmonic distortion.
<Z-9000X> 130 watts per channel into 8 ohms
<Z-7000X> 100 watts per channel into 8 ohms
Load impedance ..... 4 and 8 ohms
Total harmonic distortion
from POWER AMP IN ..... less than 0.005% at or below rated min. RMS power output
Intermodulation distortion (60 Hz:7 kHz = 4:1 SMPTE method)
from POWER AMP IN ..... less than 0.005% at rated power output
Frequency response (at 1 watt)
from POWER AMP IN ..... 5 to 200,000 Hz, +0 dB, —3.0 dB
RIAA curve deviation (PHONO, 20 Hz to 20 kHz)
..... +0.2 dB, —0.2 dB
Input sensitivity and impedance (at 1 kHz)
PHONO-MM ..... 2.5 mV/47 kilohms
PHONO-MC ..... 250μV/100 ohms
TAPE PLAY, AUX/DA ..... 150 mV/47 kilohms
MIC ..... 1.0 mV/10 kilohms
Output level (at 1 kHz)
TAPE REC ..... 150 mV/47 kilohms
PREAMP OUT ..... 1,000 mV/47 kilohms
Signal to noise ratio (short-circuit, A-network)
PHONO-MM ..... 82 dB
PHONO-MC ..... 68 dB
Channel separation (at 1 kHz)
PHONO-MM ..... 55 dB
TAPE PLAY, AUX/DA ..... 60 dB
Controls
<Z-9000X>
GRAPHIC EQUALIZER ..... ±10 dB at 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6 kHz, 15 kHz
SUBSONIC ..... —3 dB at 16 Hz (6 dB/oct)
HIGH ..... —3 dB at 5 kHz (6 dB/oct)
<Z-7000X>
SUPER BASS ..... ±10 dB at 30 Hz
BASS ..... ±10 dB at 150 Hz
MIDRANGE ..... ±10 dB at 1 kHz
TREBLE ..... ±10 dB at 10 kHz
SUBSONIC ..... —3 dB at 16 kHz (6 dB/oct)
HIGH ..... —3 dB at 5 kHz (6 dB/oct)

FM section

Tuning range ..... 88 to 107.9 MHz
Usable sensitivity
Mono IHF ..... 10.3 dBf
Stereo IHF ..... 19 dBf
50 dB quieting sensitivity
Mono ..... 14 dBf
Stereo ..... 37 dBf
Signal to noise ratio (at 65 dBf)
Mono ..... 80 dB
Stereo ..... 76 dB
Distortion (at 65 dBf)
<Z-9000X>
Mono ..... less than 0.08% at 100 Hz
less than 0.05% at 1,000 Hz
less than 0.08% at 6,000 Hz
Stereo ..... less tahn 0.1% at 100 Hz
less than 0.07% at 1,000 Hz
less than 0.1% at 6,000 Hz
<Z-7000X>
Mono ..... less than 0.15% at 100 Hz
less than 0.1% at 1,000 Hz
less than 0.15% at 6,000 Hz
Stereo ..... less than 0.25% at 100 Hz
less than 0.15% at 1,000 Hz
less than 0.25% at 6,000 Hz
Alternate channel selectivity (at 4000 kHz)
<Z-9000X> WIDE ..... 50 dB
<Z-7000X> ..... 60 dB
Capture ratio ..... 1.0 dB
Image response ratio ..... 85 dB
Spurious response ratio ..... 90 dB
IF response ratio ..... 90 dB
Stereo separation ..... 35 dB at 100 Hz
45 dB t 1,000 Hz
30 dB at 10,000 Hz
Frequency response ..... 30 to 15,000 Hz, +0.3 dB, —0.5 dB
Hum and noise (at 65 dBf) ..... 70 dB
Antenna input impedance ..... 300 ohms balanced
75 ohms unbalanced

AM section

Tuning range ..... 530 to 1,600 kHz
Usable sensitivity ..... 49 dB/m
Selectivity ..... 30 dB
Signal to noise ratio ..... 50 dB
Distortion (at 30% Modulation, 80 dB/m)
..... less than 0.5%
Image response ratio ..... 40 dB at 1,000 kHz
IF response ratio ..... 50 dB at 1,000 kHz

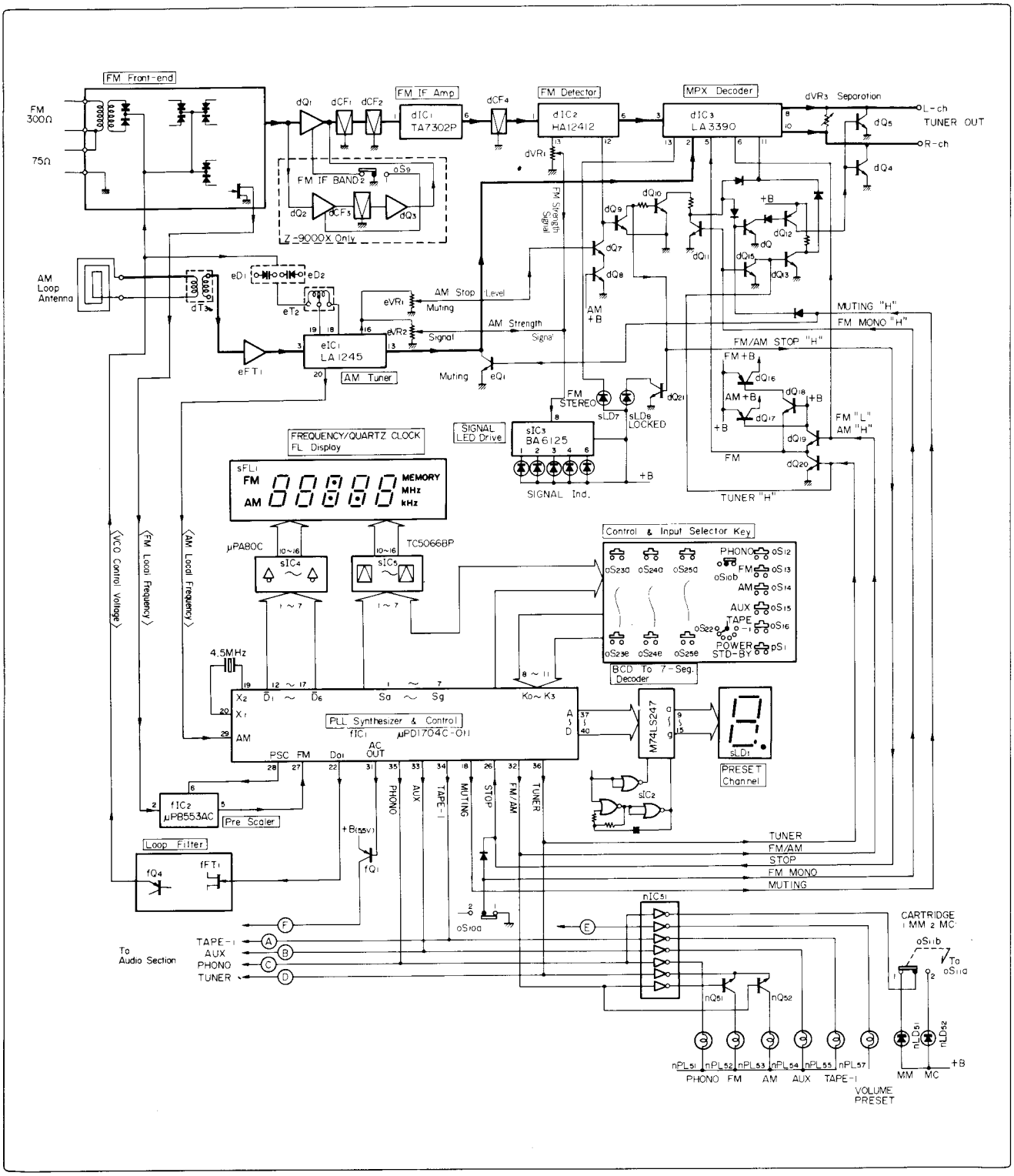
Others

Power requirements
Power voltage ..... 120, 220, 240V (50/60 Hz)
For U.S.A. and Canada ..... 120V (60 Hz)
Power consumption
<Z-9000X>
Rated consumption ..... 410 watts 520 VA
<Z-7000X>
Rated consumption ..... 360 watts 450 VA
Dimensions ..... 550 mm (21-11/6") W
150 mm (5-15/16") H
386 mm (15-1/4") D
Weight
<Z-9000X> ..... 15.2 kg (33.5 lbs.) net
17.0 kg (37.5 lbs.) packed
<Z-7000X> ..... 14.3 kg (31.5 lbs.) net
16.1 kg (35.5 lbs.) packed

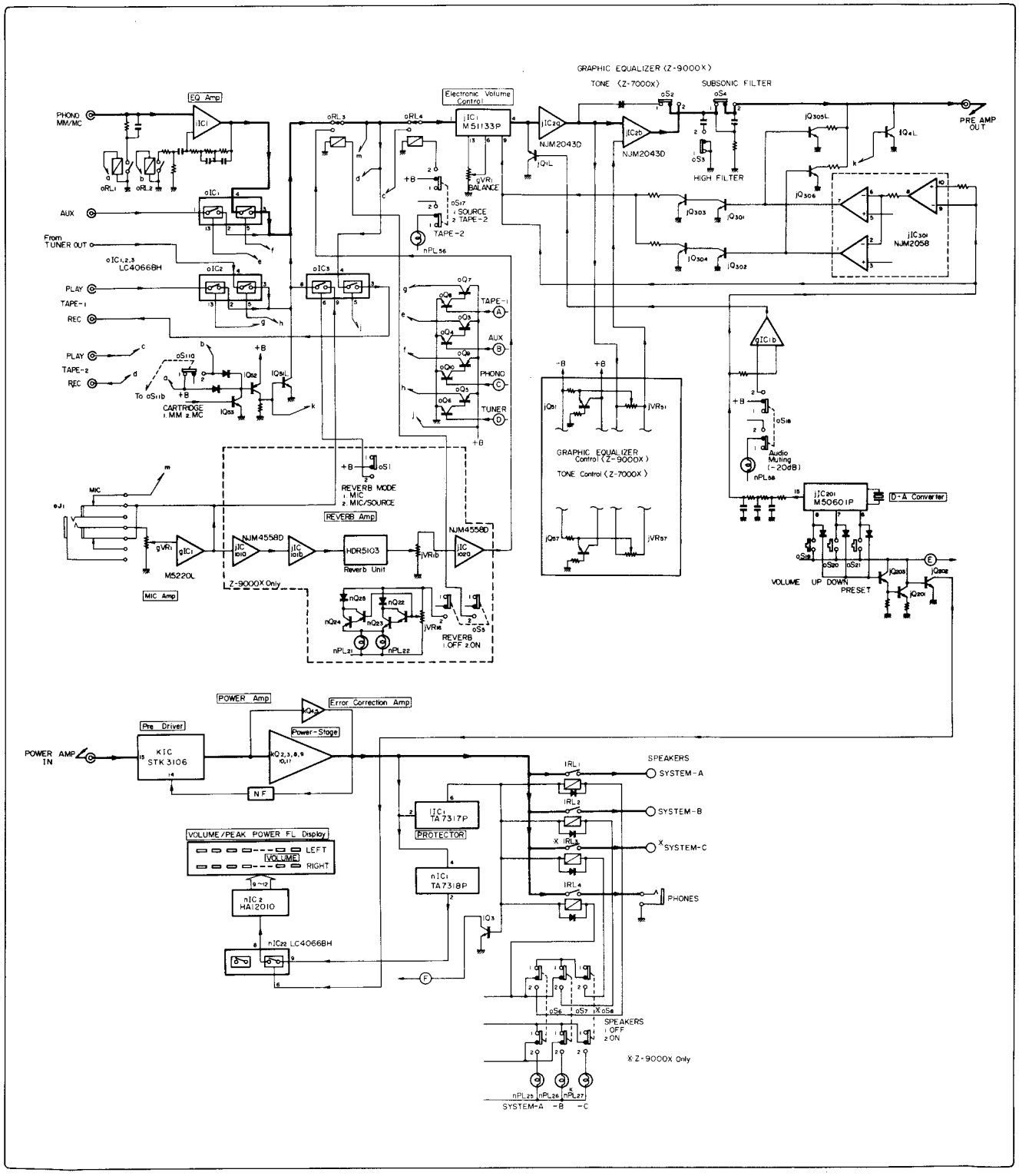
* **Design and specifications subject to changes without notice for improvements.**

1. BLOCK DIAGRAM

1-1. Tuner & Control Section



1-2. Audio Section



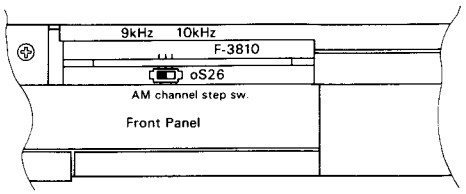
2. ADJUSTMENTS

2-1. Reference Frequency Adjustment of Synthesizer Control Circuit

(See F-3810 Parts Location on Page 11)

Note: 1. Input Selector ..... AM
2. TUNING/FM MODE ..... MANUAL/MONO
3. Remove the Front Panel Ass'y and Sub Panel Ass'y.
4. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS26, See Fig. 2-1) is set to 9 kHz and "**" is for the 10 kHz.
5. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 2-1



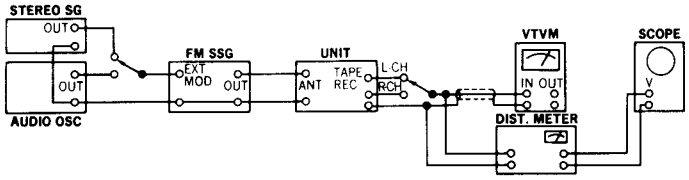
SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
X'tal Frequency Adj.	Set frequency display to *999kHz <**1000kHz>	Between eTP2 (eC29) and GND, F-3806, Frequency Counter	fTC1 (F-3810)	*1449kHz ± 10Hz <**1450kHz ± 10Hz>	

2-2. FM Adjustments

(See Fig.2-2, 2-4 and Top View on Page 17 and 18)

Note: 1. Input Selector ..... FM
2. FM IF BAND ..... WIDE
3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS26, See Fig. 2-1) is set to 9 kHz and "**" is for the 10 kHz.
4. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 2-2



1) FM IF

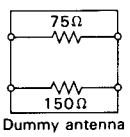
Note: 1. TUNING/FM MODE ..... MANUAL/MONO

STEP	SUBJECT	FEED SIGNAL			MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM		TO				
1.	FM IF Coil Adj.	*98MHz <**98.1MHz> ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG		ANT terminal 300Ω	Between Point Ⓐ (dD1) and GND, DC Volt Meter	T1 (Front-end)	MAX. DC Volt	
2.	Discriminator Coil Adj.	1	*98MHz <**98.1MHz> ANT Input 65 dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Between dTP1 and dTP2, Across dR30 (F-3806), DC Volt Meter	dT2 (F-3806)	0 ± 20mV	
		2	Same as above	Same as above	REC OUT L-CH or R-CH, VTVM & SCOPE, Dist Meter	dT3 (F-3806)	Min. THD	
3.	Signal Level Adj.	*98MHz <**98.1MHz> ANT Input 15dBf (9.8dB), 1kHz (100% MOD.), FM SSG		Same as above	SIGNAL Indicator	dVR1 (F-3806)	Make only one LED lighting	SIGNAL

◆ Technical Hint for FM adjustment

- There are two kind in indication of FM SG output attenuator.
  1. Attenuator with marking of 75Ω open ..... open indication type.
  2. Attenuator with marking of 75Ω load or close ..... load or close indication type.
- FM SG output level in this FM adjustment are described as open indication type.
- To feed FM signal, a dummy antenna circuit as Fig. 2-3 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 2-3



- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

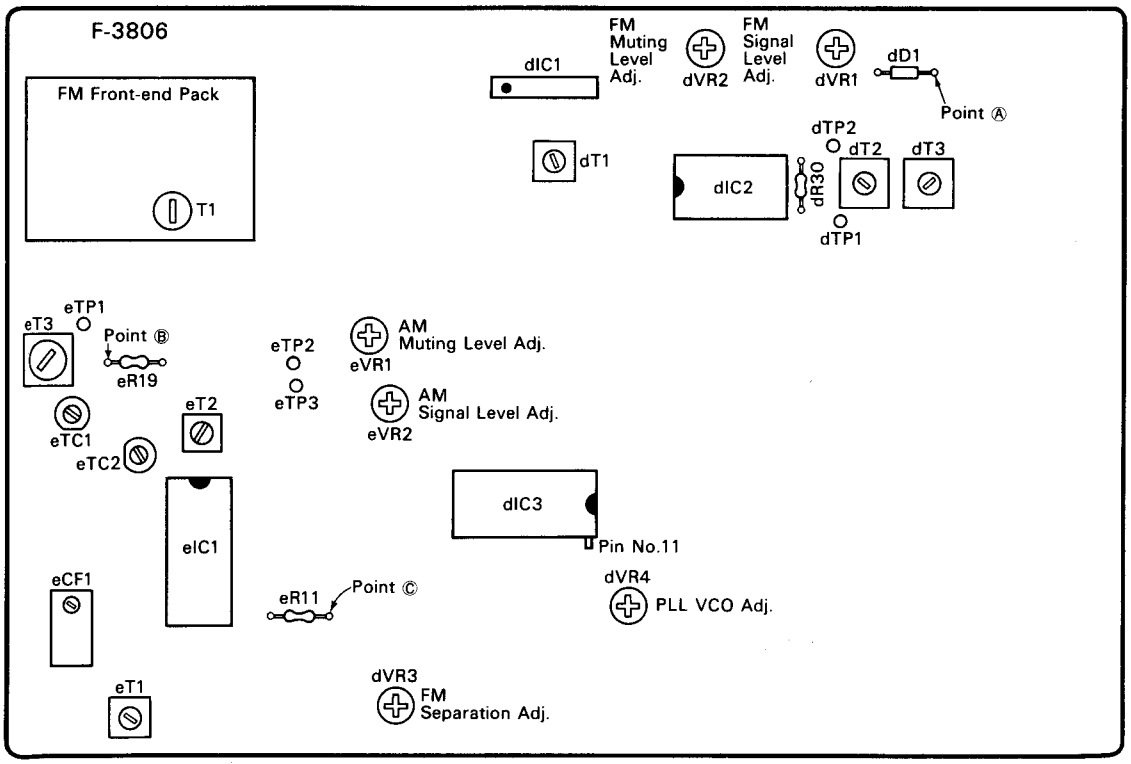
	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	−6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

2) FM STEREO

Note: 1. TUNING/FM MODE ..... AUTO/STEREO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	PLL V.C.O. Adj.	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG	ANT terminal 300Ω	STEREO Indicator	dVR4 (F-3806)	Light Indicator	Adjust the dVR4 within center of lighting level.
	PLL V.C.O. Adj. In case of using Frequency counter	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, No MOD.	Same as above	Pin No.11 of dIC3 (LA3390) and GND, F-3806, Frequency counter	dVR4 (F-3806)	19kHz±30Hz	Before performance this adjustment, turn dVR3 fully counter-clockwise.
2.	Separation Adj.	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz +Pilot (100% MOD.), STEREO SG.	Same as above	REC OUT L-CH, VTVM & SCOPE	—	Read the indication on VTVM	Confirm R→L-CH
				REC OUT R-CH VTVM & SCOPE	dVR3 (F-3806)	—40 dB from the indication above.	
3.	Muting Level Adj.	*98MHz <**98.1MHz> 20dBf (14.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	REC OUT L-CH or R-CH. VTVM & SCOPE	dVR2 (F-3806)	Output Signal comes out.	

Fig. 2-4



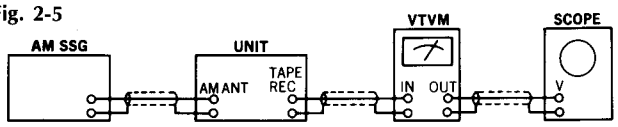
2-3. AM Adjustment

(See Figs. 2-4, 2-5, 2-6 and Top View on Page 17 and 18)

Note: 1. Input Selector ..... AM
2. TUNING/FM MODE ..... MANUAL/MONO
3. The frequency with "*" mark is for the unit taht the AM 9/10 kHz channel step switch (oS26, See Fig. 2-1) is set to 9 kHz and "**" is for the 10 kHz.
4. AM channel step frequency of the unit without the AM channel step switch (oS26) is fixed to 10 kHz, and it is applicable to the USA (UL) and Canada (CSA) under industrial standards.
5. Preset the following frequencies to the memories.

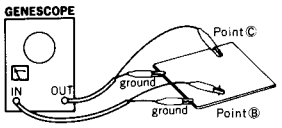
PRESET KEY	AM	
	9 kHz step	10 kHz step
1	522 kHz	530 kHz
2	1611 kHz	1620 kHz
3	603 kHz	600 kHz
4	1404 kHz	1400 kHz

Fig. 2-5



1) AM IF

Fig. 2-6



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 50dB	Point Ⓑ (eR19), F-3806	Between Point © (eR11) and GND, F-3806	eCF1, eT1, (F-3806)	MAX. Waveform	450kHz

2) AM Tuning Voltage

Note: Feed Signal is no input

STEP	SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	*522kHz <**530kHz> Tuning Voltage	Depress PRESET Key 1 to readout *522kHz <**530kHz>	Between eTP1 (eR20) and GND, F-3806, DC Volt Meter	eT2 (F-3806)	1V±0.1V	•Repeat procedures as state in STEP 1 & 2.
2.	*1611kHz <**1620kHz> Tuning Voltage	Depress PRESET Key 2 to readout *1611kHz <**1620kHz>	Same as above	eTC2 (F-3806)	9V±0.1V	

3) AM RF, Signal Level and Muting Level

Note: 1. Connect AM loop antenna to the AM antenna terminal and GND terminal.
2. Repeat procedures as state in STEP 1 and 2.

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	*603kHz <**600kHz> RF Adj.	*603kHz <**600kHz> ANT Input 50 dB, 400Hz (30% MOD.), AM SSG	ANT terminal	REC OUT L-CH or R-CH, VTVM & SCOPE	eT3 (F-3806)	MAX. Output	•Depress PRESET Key 3 to readout *603kHz <**600kHz>
2.	*1404kHz <**1400kHz> RF Adj.	*1404kHz <**1400kHz> ANT Input 50 dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-3806)	MAX. Output	•Depress PRESET Key 4 to readout *1404kHz <**1400kHz>
3.	Signal Level Adj.	*999kHz <**1000kHz> ANT Input 55 dB, No MOD., AM SSG	Same as above	SIGNAL Indicator	eVR2 (F-3806)	Make only 1 LED, lighting	SIGNAL
4.	Muting Level Adj.	*999kHz <**1000kHz> ANT Input 55 dB, 400Hz (30% MOD.), AM SSG	Same as above	REC OUT L-CH or R-CH, VTVM & SCOPE	eVR1 (F-3806)	Output signal comes out.	•TUNING/FM MODE switch....AUTO

2-4. Driver Circuit Adjustment

(See Top View on Page 17 and 18)

Note: 1. Room Temperature ..... 18°C ~ 28°C
2. Master Volume ..... Minimum
3. Input Selector ..... AUX

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	DC Offset Voltage Adj.	Pin No.10 of kIC1 (STK3106), F-3804, DC Volt Meter	kVR1 (F-3804)	DC −25V ± 250mV	•Connect dummy load (8Ω) to speaker terminal.
2.	DC Offset Voltage Adj.	Pin No.9 of kIC1 (STK3106), F-3804, DC Volt Meter	kVR3 (F-3804)	DC 25V ± 250mV	
3.	Bias Current Adj. L-CH	Between emitter terminals of kQ10L and kQ11L, F-3804, DC Volt Meter	kVR2L (F-3804)	DC 2mV ± 0.5mV	•Before turning ON power switch, turn kVR2L, R fully counterclockwise. •This bias current value into voltage by ohms law.
4.	Bias Current Adj. R-CH	Between emitter terminals of kQ10R and kQ11R, F-3804, DC Volt Meter	kVR2R (F-3804)		

* After adjustments STEP 1 and 2, confirm follwing voltage
Speaker terminal voltage ..... ±200mV

◆ Selection of Intermediate Frequencies (FM)

* When the center frequency (shown by a color) of the ceramic filter is changed, the following connection must be made by using diodes. (See Parts Location on Page 11 <F-3810>)
* Unity the color marks of the FM ceramic filters (dCF1, dCF2, dCF3 <Z-9000X only> and dCF4) on the F-3806 with the same color.

Colouring	Intermediate frequency	Connecting Position of Diode on F-3810	
		fD17	fD18
RED	10.700MHz	—	—
ORANGE	10.725MHz	○	—
BLACK	10.650MHz	—	○
BLUE	10.675MHz	○	○

○: Connect diode —: Remove diode

•Abbreviations

Equipment
AM FM Generator Oscilloscope ..... Genescope
AM Standard Signal Generator ..... AM SSG
FM Standard Signal Generator ..... FM SSG
FM Stereo Generator ..... Stereo SG
Oscilloscope ..... Scope
Audio Oscillator ..... Audio Osc.
Distortion Meter ..... Dist. Meter

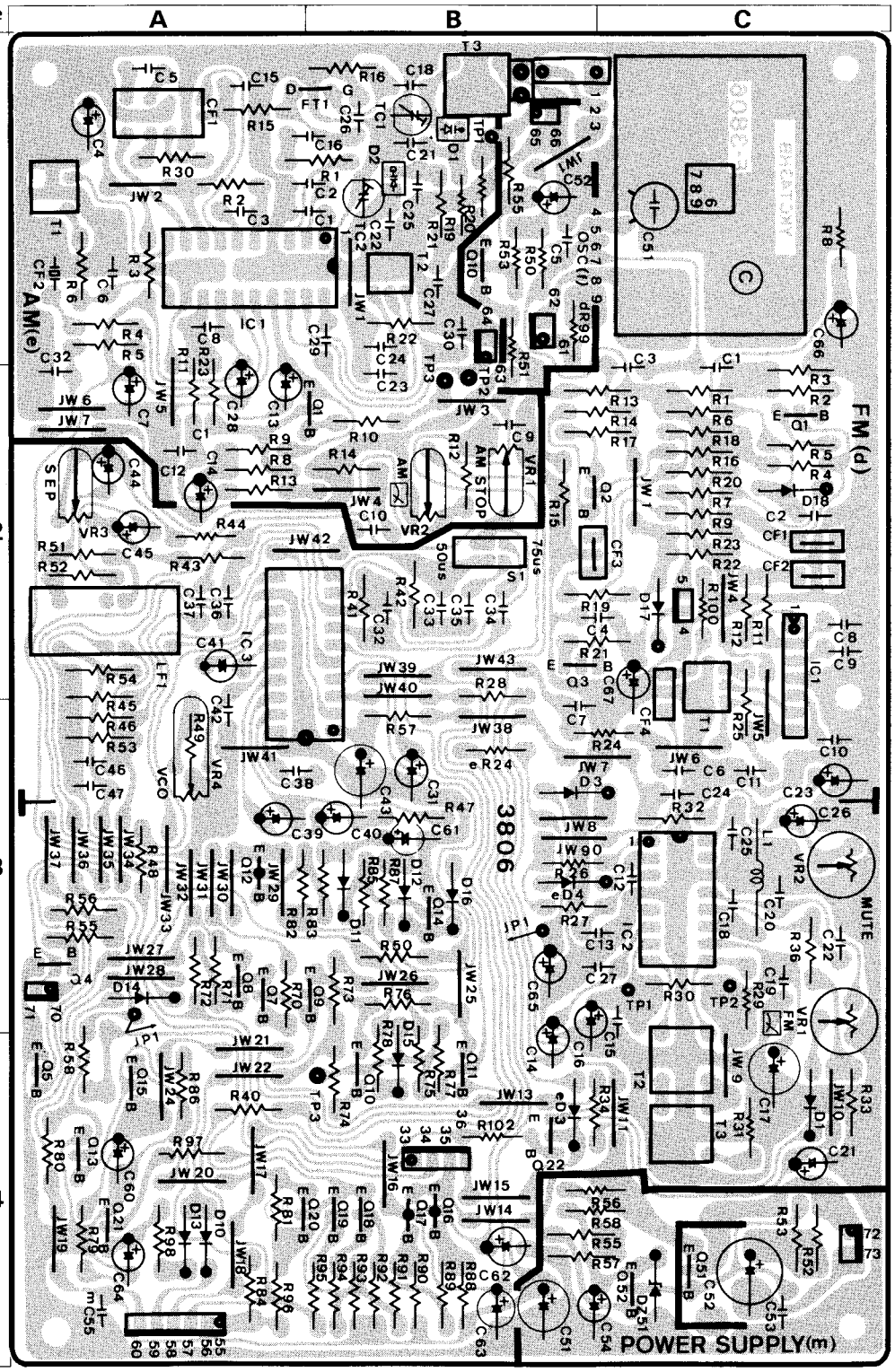
Others
Antenna ..... ANT.
Modulation ..... MOD.
Total Harmonic Distortion ..... T.H.D.

3. PARTS LOCATION & PARTS LIST

•Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.

3-1. F-3806 Tuner Circuit Board (Stock No. 00751201 = Z-9000X/00752401 = Z-7000X)

Component Side

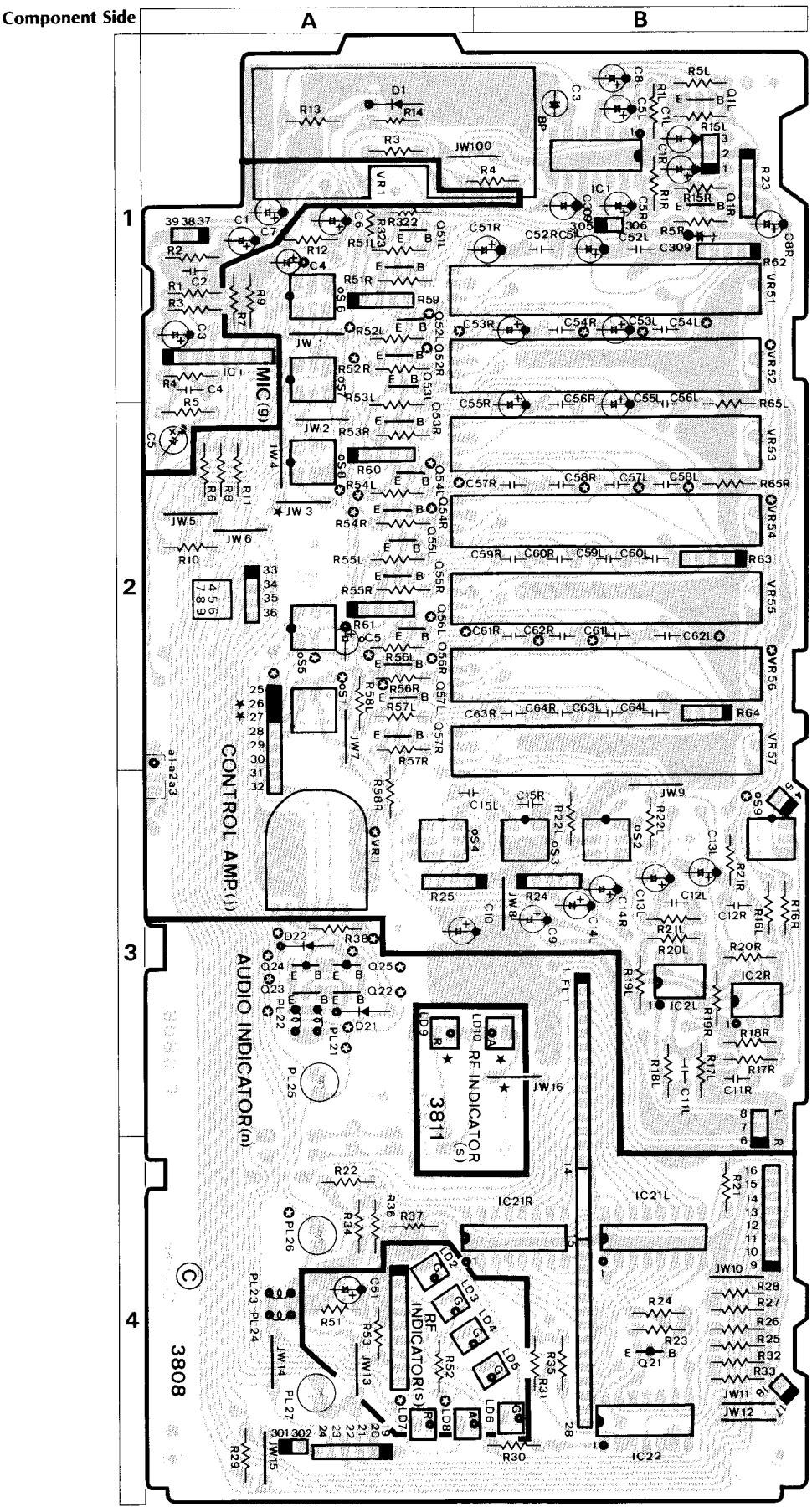


Parts List <F-3806>

Parts No.	Stock No.	Description
	46392700	FM Frontend Pack FE446U
•Transistor		
dQ1	46202901	2SC1674
	or 46393201	2SC2786
dQ2	46202901	2SC1674 <Z-9000X Only>
	or 46393201	2SC2786 <Z-9000X Only>
dQ3	46202901	2SC1674 <Z-9000X Only>
	or 46393201	2SC2786 <Z-9000X Only>
dQ4	46367101	2SC2603
dQ5	46367101	2SC2603
dQ7	46367101	2SC2603
dQ8	46367101	2SC2603
dQ9	46367101	2SC2603
dQ10	46367101	2SC2603
dQ11	46367101	2SC2603
dQ12	46367001	2SA1115
dQ13	46367101	2SC2603
dQ14	46367101	2SC2603
dQ15	46367101	2SC2603
dQ16	46367001	2SA1115
dQ17	46367001	2SA1115
dQ18	46367101	2SC2603
dQ19	46367101	2SC2603
dQ20	46367101	2SC2603
dQ21	46367101	2SC2603
dQ22	03059501	2SC945
	or 03068301	2SC2320
	or 07194801	2SC1815
•IC		
dIC1	03605900	TA7302P
dIC2	07196000	HA12412
dIC3	46267100	LA3390
•Diode		
dD1	03117600	1S2473D
	or 46086000	1S1588
dD3	03117600	1S2473D
	or 46086000	1S1588
dD10	03117600	1S2473D
	or 46086000	1S1588
dD11	03117600	1S2473D
	or 46086000	1S1588
dD12	03117600	1S2473D
	or 46086000	1S1588
dD13	03117600	1S2473D
	or 46086000	1S1588
dD14	03117600	1S2473D
	or 46086000	1S1588
dD15	03117600	1S2473D
	or 46086000	1S1588
dD16	03117600	1S2473D
	or 46086000	1S1588
dD17	03117600	1S2473D
	or 46086000	1S1588
dD18	03111600	1S2473D
	or 46086000	1S1588

Parts No.	Stock No.	Description
dCF1~4	46393500	Ceramic Filter kit (Including dCF1~4) <Z-9000X>
dCF1~3	46393600	Ceramic Filter kit (Including dCF1~3) <Z-7000X>
dLF1	46266900	Low Pass Filter
dL1	07250300	Peaking Coil 2.2μH
dT1	46369500	FM IF Coil
dT2	46422500	FM RF Coil
dT3	46422600	FM RF Coil
dVR1	10351300	10kΩ (B) S.V.R., FM Signal Level Adj.
dVR2	10351500	22kΩ (B) S.V.R., FM Muting Level & Stop Level Adj.
dVR3	07241400	20kΩ (B) S.V.R., FM Separation Adj.
dVR4	07241300	10kΩ (B) S.V.R., V.C.O. Adj.
dS1	07251100	Slide SW., de-emphasis
•Transistor		
eQ1	46367101	2SC2603
•FET		
eFT1	46369900	2SK192A-Y
	or 46369901	2SK192A-GR
•IC		
eIC1	07237200	LA1245
•Diode		
eD1	46254600	1SV100 (Varactor)
eD2	46254600	1SV100 (Varactor)
eD3	03117600	1S2473D
	or 46086000	1S1588
eD4	03117600	1S2473D
	or 46086000	1S1588
eTC1	46437500	Trimmer Capacitor 20pF
eTC2	46437500	Trimmer Capacitor 20pF
eCF1	07254000	Ceramic Filter
eCF2	07265100	Ceramic Filter
eT1	46369600	AM IF Coil
eT2	46394700	AM RF Coil
eT3	46394600	AM RF Coil
eVR1	07241500	50kΩ (B) S.V.R., AM Muting Lever Adj.
eVR2	07241200	50kΩ (B) S.V.R., AM Signal Level Adj.
•Transistor		
fQ10	46367101	2SC2603
mQ51	07287101	2SD1147
mQ52	46367101	2SC2603
•Zener Diode		
mDZ51	03177600	RD6.8E-B

3-2. F-3808 Control & Selector Switch Circuit Board (Stock No. 00751001 = Z-9000X/00752101 = Z-7000X)



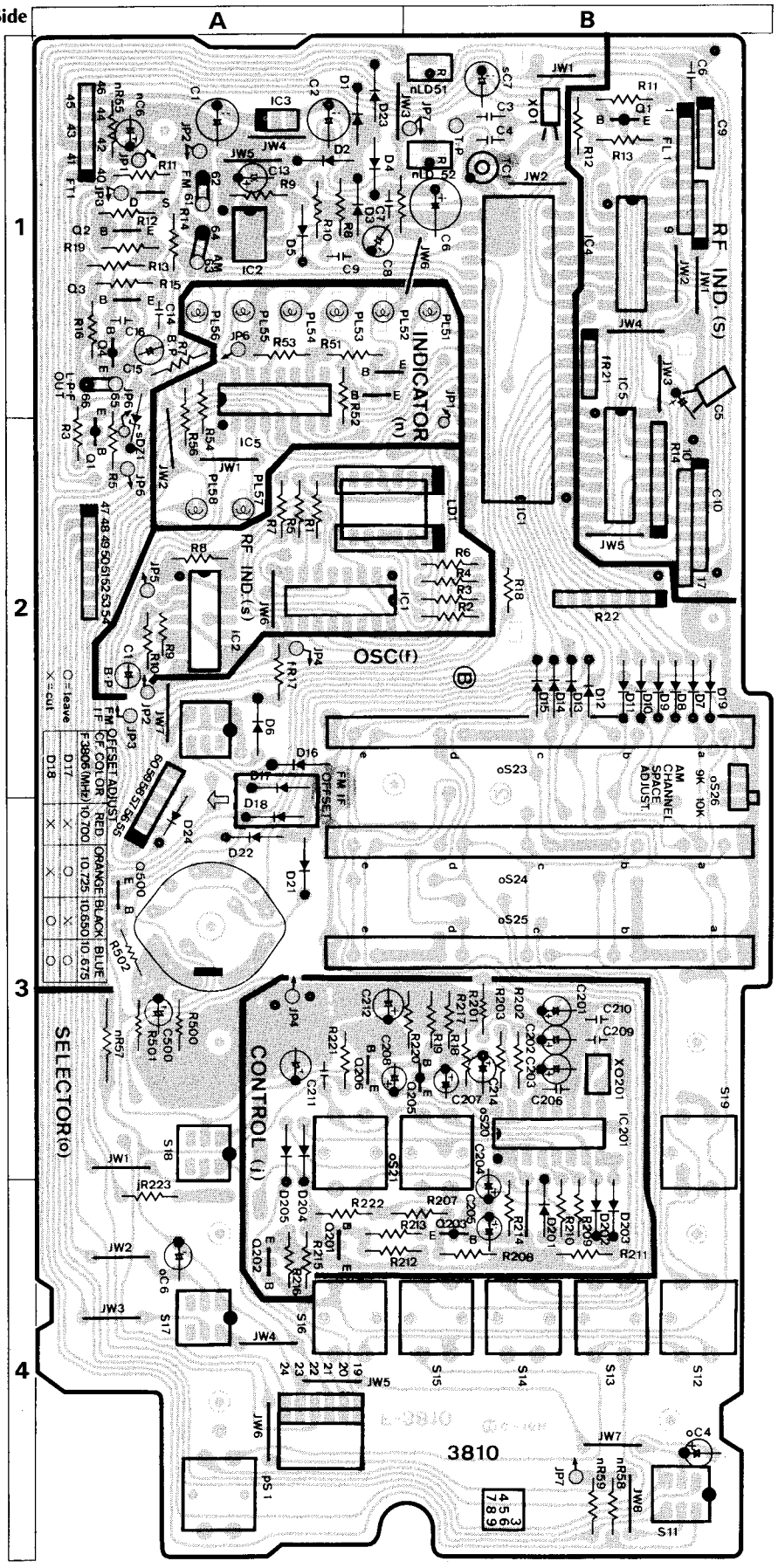
Parts List <F-3808>

Parts No.	Stock No.	Description
•IC		
gIC1	46288800	M5220L
gVR1	46362600	20kΩ (A) and 50kΩ (B) V.R., MIC MIXING, BALANCE
•Transistor		
jQ1	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ51	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ52	07194801	2SC1815 <Z-9000X Only>
	or 03059501	2SC945 <Z-9000X Only>
	or 03068301	2SC2320 <Z-9000X Only>
jQ53	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ54	07194801	2SC1815 <Z-9000X Only>
	or 03059501	2SC945 <Z-9000X Only>
	or 03068301	2SC2320 <Z-9000X Only>
jQ55	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ56	07194801	2SC1815 <Z-9000X Only>
	or 03059501	2SC945 <Z-9000X Only>
	or 03068301	2SC2320 <Z-9000X Only>
jQ57	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•IC		
jIC1	46362000	M51133P
jIC2	46151400	NJM2043D
•Diode		
jD1	03111600	1S2473D
•Resistor Array		
jR23	46343100	100kΩ×4
jR24	46343100	100kΩ×4
jR25	46343100	100kΩ×4
jR59	46341900	10kΩ×4
jR60	46341900	10kΩ×4
jR61	46341900	10kΩ×4
jR62	46343100	100kΩ×4
jR63	46343100	100kΩ×4
jR64	46343100	100kΩ×4
jC3	00305200	4.7μF 16V E.B.
jVR1	46362700	10kΩ (B)×2 V.R., REVERB DEPTH <Z-9000X Only>
jVR51	46360500	50kΩ×2 Slide V.R., 60 Hz/GRAPHIC EQUALIZER <Z-9000X Only>
jVR52	46360500	50kΩ×2 Slide V.R., 150 Hz/GRAPHIC EQUALIZER <Z-9000X Only>
jVR53	46360500	50kΩ×2 Slide V.R., 400 Hz/GRAPHIC EQUALIZER <Z-9000X>
	46360500	50kΩ×2 Slide V.R., BASS <Z-7000X>
jVR54	46360500	50kΩ×2 Slide V.R., 1 kHz/GRAPHIC EQUALIZER <Z-9000X Only>
jVR55	46360500	50kΩ×2 Slide V.R., 2.5 kHz/GRAPHIC EQUALIZER <Z-9000X>
	46360500	50kΩ×2 Slide V.R., MIDRANGE <Z-7000X>
jVR56	46360500	50kΩ×2 Slide V.R., 6 kHz/GRAPHIC EQUALIZER <Z-9000X Only>
jVR57	46360500	50kΩ×2 Slide V.R., 15 kHz/GRAPHIC EQUALIZER <Z-9000X>
	46360500	50kΩ×2 Slive V.R., TREBLE <Z-7000X>

Parts No.	Stock No.	Description
•Transistor		
nQ21	46086601	2SA937
nQ22	07194801	2SC1815 <Z-9000X Only>
	or 03059501	2SC945 <Z-9000X Only>
	or 03068301	2SC2320 <Z-9000X Only>
nQ23	07194801	2SC1815 <Z-9000X Only>
	or 03059501	2SC945 <Z-9000X Only>
	or 03068301	2SC2320 <Z-9000X Only>
nQ24	07194701	2SA1015 <Z-9000X Only>
	or 07197001	2SA733A <Z-9000X Only>
	or 03012701	2SA999 <Z-9000X Only>
nQ25	07194701	2SA1015 <Z-9000X Only>
	or 07197001	2SA733A <Z-9000X Only>
	or 03012701	2SA999 <Z-9000X Only>
•IC		
nIC21	46254700	HA12010
nIC22	46255000	LC4066BH
•Diode		
nD21	03103400	10D-1 <Z-9000X Only>
nD22	03103400	10D-1 <Z-9000X Only>
nFL1	46254100	FL. Display Tube FG24SJ1GR
nPL21	46422200	Pilot Lamp 6V 0.15A <Z-9000X Only>
nPL22	46422200	Pilot Lamp 6V 0.15A <Z-9000X Only>
nPL23	04006600	Pilot Lamp 8V 0.15A
nPL24	04006600	Pilot Lamp 8V 0.15A
nPL25	46359900	Pilot Lamp 8V 0.1A
nPL26	46359900	Pilot Lamp 8V 0.1A <Z-9000X Only>
nPL27	46359900	Pilot Lamp 8V 0.1A
oS1	46360000	Push SW., REVERB MODE <Z-9000X Only>
oS2	46360000	Push SW., GRAPHIC EQUALIZER <Z-9000X>, TONE <Z-7000X>
oS3	46360000	Push SW., HIGH FILTER
oS4	46360000	Push SW., SUBSONIC FILTER
oS5	46360000	Push SW., REVERB ON/OFF <Z-9000X Only>
oS6	46360000	Push SW., SPEAKERS A
oS7	46360000	Push SW., SPEAKERS B
oS8	46360000	Push SW., SPEAKERS C <Z-9000X Only>
oS9	46360000	Push SW., FM IF BAND <Z-9000X Only>
•IC		
sIC3	46392500	BA6125
sFL1	46253900	Fl. Display Tube FG712B1GR
•Light Emitting Diode		
sLD2	07251000	TLY-123
	or 46470400	SEL2910A
sLD3	07251000	TLY-123
	or 46470400	SEL2910A
sLD4	07251000	TLY-123
	or 46470400	SEL2910A
sLD5	07251000	TLY-123
	or 46470400	SEL2910A
sLD6	07251000	TLY-123
	or 46470400	SEL2910A
sLD7	46176900	TLS-123 <Z-9000X Only>
	or 46470200	SEL2210S <Z-9000X Only>
sLD8	07250900	TLG-123A <Z-9000X Only>
	or 46470300	SEL2410E <Z-9000X Only>
sLD9	46176900	TLS-123 <Z-7000X Only>
	or 46470200	SEL2210S <Z-7000X Only>
sLD10	07250900	TLG-123A <Z-7000X Only>
	or 46470300	SEL2410S <Z-7000X Only>
sC51	46275600	10μF 16V E.C.

3-3. F-3810 Tone Control & Audio Indicator Circuit Board (Stock No. 00751601 = Z-9000X/00752801 = Z-7000X)

Component Side



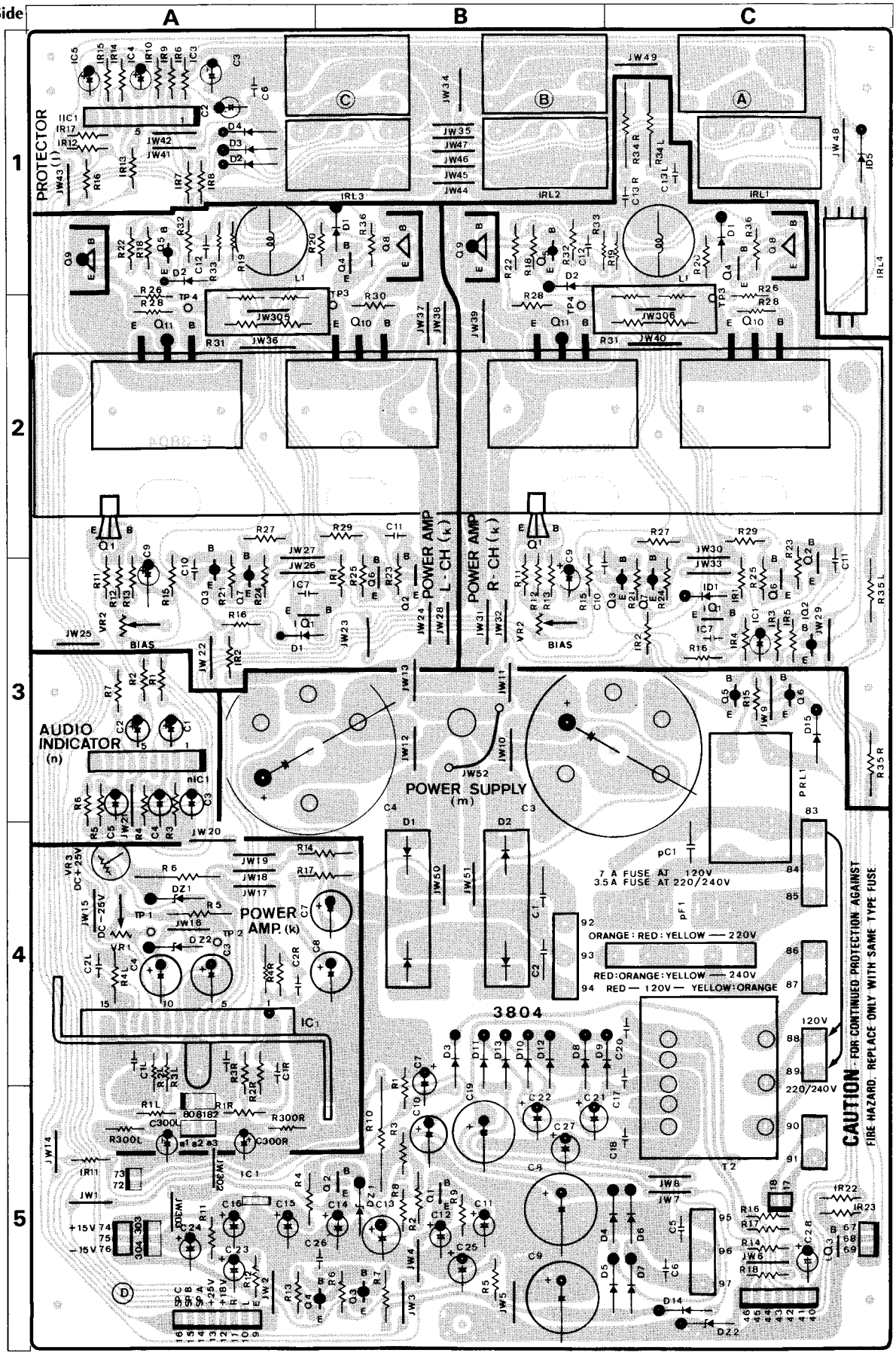
Parts List <F-3810>

Parts No.	Stock No.	Description
•Transistor		
fQ1	07197001	2SA733A
	or 07194701	2SA1015
	or 03012701	2SA999
fQ2	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
fQ3	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
fQ4	07197001	2SA733A
	or 03012701	2SA999
	or 07194701	2SA1015
•FET		
fFT1	03703401	2SK163-K2
	or 03703402	2SK163-L1
•IC		
fIC1	46253300	μPD1704C-011
fIC2	46253400	μPB553AC
fIC3	46361200	L78N06
fXO1	46253600	Quartz Element 4.5 MHz
•Diode		
fD1	03111600	1S2473D
fD2	03111600	1S2473D
fD3	03111600	1S2473D
fD4	03111600	1S2473D
fD5	03111600	1S2473D
fD6	03111600	1S2473D
fD7	03111600	1S2473D
fD8	03111600	1S2473D
fD9	03111600	1S2473D
fD10	03111600	1S2473D
fD11	03111600	1S2473D
fD12	03111600	1S2473D
fD13	03111600	1S2473D
fD14	03111600	1S2473D
fD15	03111600	1S2473D
fD16	03111600	1S2473D
fD17	03111600	1S2473D
fD18	03111600	1S2473D
fD19	03111600	1S2473D
fD21	03111600	1S2473D
fD22	03111600	1S2473D
fD23	03111600	1S2473D
fD24	03111600	1S2473D
fR21	46343100	100kΩ×4 A.R.
fR22	46392900	100kΩ×7 A.R.
fC1	46316400	100μF 16V E.C.
fC2	46275900	47μF 16V E.C.
fC6	46422800	470μF 6.3V E.C.
fC8	46276800	4.7μF 50V E.C.
fC13	46275700	22μF 16V E.C.
fC15	00305800	2.2μF 25V E.B.
fTC1	46437500	Trimmer Capacitor 30pF
•Transistor		
jQ201	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ202	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ203	07194701	2SA1015
	or 07197001	2SA733A
	or 03012701	2SA999
jQ205	07194701	2SA1015
	or 07197001	2SA733A
	or 03012701	2SA999
jQ206	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•IC		
jIC201	46361900	M50601P

Parts No.	Stock No.	Description
•Diode		
jD201	03111600	1S2473D
jD202	03111600	1S2473D
jD203	03111600	1S2473D
jD204	03111600	1S2473D
jD205	03111600	1S2473D
jX0201	07274000	Ceramic Filter CSB550A
•Transistor		
nQ51	46134201	2SD1111
nQ52	46134201	2SD1111
•IC		
nIC51	46269600	μPA81C
•LED		
nLD51	46176900	TLS-123
	or 46470200	SEL2210S
nLD52	46176900	TLS-123
	or 46470200	SEL2210S
nPL51	46359900	Pilot Lamp 8V 0.1A
nPL52	46359900	Pilot Lamp 8V 0.1A
nPL53	46359900	Pilot Lamp 8V 0.1A
nPL54	46359900	Pilot Lamp 8V 0.1A
nPL55	46359900	Pilot Lamp 8V 0.1A
nPL56	46359900	Pilot Lamp 8V 0.1A
nPL57	46359900	Pilot Lamp 8V 0.1A
nPL58	46359900	Pilot Lamp 8V 0.1A
•Transistor		
oQ500	03059501	2SC945
	or 03068301	2SC2320
	or 07194801	2SC1815
oC500	46275800	33μF 16V E.C.
oS10	46360000	Push SW., TUNING/FM MODE
oS11	46360000	Push SW., CARTRIDGE
oS12	11907000	Push SW., PHONO
oS13	11907000	Push SW., FM
oS14	11907000	Push SW., AM
oS15	11907000	Push SW., AUX
oS16	11907000	Push SW., TAPE-1
oS17	46360000	Push SW., TAPE-2
oS18	46360000	Push SW., MUTING
oS19	11907000	Push SW., VOLUME UP
oS20	11907000	Push SW., VOLUME DOWN
oS21	11907000	Push SW., VOL. PRESET
oS22	46396300	Rotary SW., PROGRAM TIMER
oS23	46365200	Push SW., control keyboard, 1/3/5/7/9
oS24	46365200	Push SW., control keyboard, 2/4/6/8/0
oS25	46365200	Push SW,, TUNING/MEMORY/ PRESET SCAN/CLOCK CALL
oS26	46394000	Slide SW., AM channel step
pS1	11907000	Push SW., POWER STD-BY
•Transistor		
sQ1	46086601	2SA937
•IC		
sIC1	46257100	M74LS247
	or 46257200	MB74LS247
sIC2	03610500	TC4001BP
sIC4	46253500	μPA80C
sIC5	07197300	TC5066BP
sLD1	46166200	Light Emitting Diode SEL-510
sR14	46392900	100kΩ×7 A.R.
sC1	00306800	1μF 50V E.B.
sC5	46275900	47μF 16V E.C.
sC7	46422700	47μF 35V E.C.
sC9	46261400	Capacitor Array 330pF×4 50V
sC10	46261400	Capacitor Array 330pF×4 50V
sC11	46263000	Capacitor Array 330pF×7 50V
	46364700	IC Socket

3-4. F-3804 Power Amp. & Power Supply Circuit Board (Stock No. 00750801 = Z-9000X/00751901 = Z-7000X)

Component Side



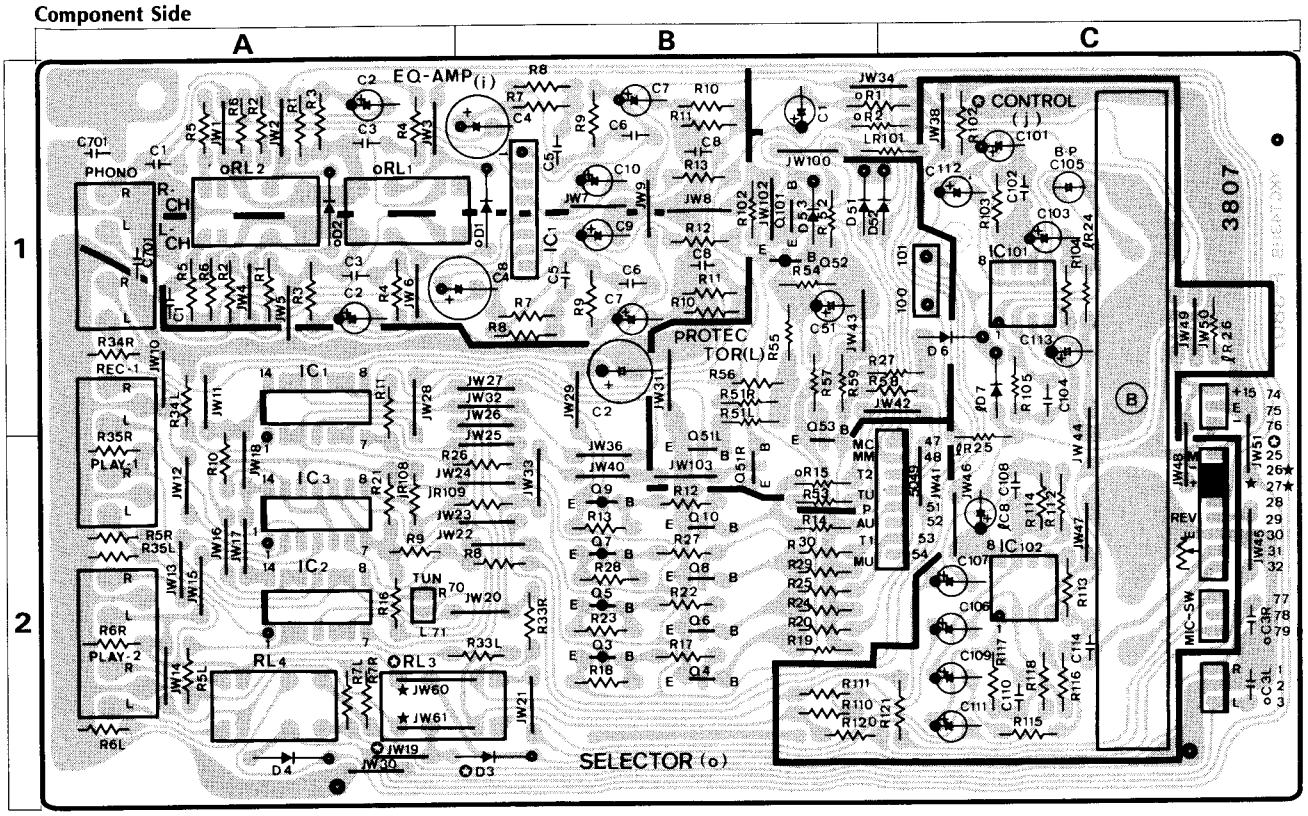
Parts List <F-3804>

Parts No.	Stock No.	Description
•Transistor		
kQ1	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
kQ2	03066801	2SC2071
kQ3	03010301	2SA939
kQ4	03066801	2SC2071
kQ5	03010301	2SA939
kQ6	46127701	2SC2909
kQ7	46127601	2SA1207
kQ8	03067201	2SC2238B
kQ9	03010701	2SA968B
kQ10	46440101	2SC2774LBR <Z-9000X>
	07100401	2SC2773LBR <Z-7000X>
kQ11	46440001	2SA1170LBR <Z-9000X>
	07100301	2SA1169LBR <Z-7000X>
•IC		
kIC1	46258300	STK3106
•Diode		
kD1	03117600	1S2473D
	or 46086000	1S1588
kD2	03117600	1S2473D
	or 46086000	1S1588
•Zener Diode		
kDZ1	46116100	05Z24-Z
kDZ2	03180400	RD27E-B
kR6	00187900	2.2kΩ 2W N.I.R.
kR31	46637800	0.33Ω×2 7W Ce.R.
kR34	00185500	100Ω 2W N.I.R.
kC12	00406400	0.012μF 100V F.C.
kC13	00407800	0.047μF 100V F.C.
kL1	46027200	Inductor 1μH
kVR1	07241000	1kΩ (B) S.V.R., DC 0V Adj.
kVR2	07241000	1kΩ (B) S.V.R., Bias Adj.
kVR3	10350500	470Ω (B) S.V.R., DC 0V Adj.
•Transistor		
IQ1	46127701	2SC2909
IQ2	03010901	2SA992
IQ3	46367101	2SC2603
•IC		
IIC1	46207600	TA7317P
•Diode		
ID1	03117600	1S2473D
	or 46086000	1S1588
ID2	03117700	10E-2
ID3	03117700	10E-2
ID4	03117700	10E-2 <Z-9000X Only>
ID5	03117700	10E-2
IRL1	07198400	Relay (RL3 2M)
IRL2	07198400	Relay (RL3 2M)
IRL3	07198400	Relay (RL3 2M) <Z-9000X Only>
IRL4	11504300	Relay (RL5 2M)

Parts No.	Stock No.	Description
•Transistor		
mQ1	03085201	2SD438
mQ2	03084801	2SD358
mQ3	03033101	2SB528
mQ4	46367001	2SA1115
mQ5	46367001	2SA1115
mQ6	46367001	2SA1115
•IC		
mIC1	46361600	L78N15
•Diode		
mD1	03113200	SS-5R
mD2	03113100	SS-5
mD3	03117700	10E-2
mD4	03117700	10E-2
mD5	03117700	10E-2
mD6	03117700	10E-2
mD7	03117700	10E-2
mD8	03117700	10E-2
mD9	03117700	10E-2
mD10	03117700	10E-2
mD11	03117700	10E-2
mD12	03117700	10E-2
mD13	03117700	10E-2
mD14	03117700	10E-2
mD15	03117700	10E-2
•Zener Diode		
mDZ1	03180200	RD24E-B
mDZ2	03171900	RD27F-B
mC1	08680400	10000pF 500V C.C.
mC2	08680400	10000pF 500V C.C.
mC3	46223000	10000μF 80V E.C. <Z-9000X >
	46223200	10000μF 71V E.C. <Z-7000X>
mC4	46223000	10000μF 80V E.C. <Z-9000X>
	46223200	10000μF 71V E.C. <Z-7000X>
mT2	15008511	Power Transformer
•IC		
nIC1	03610000	TA7318P
	22902400	Terminal Board 4P, SPEAKERS
pC1	46425800	0.01μF 400V C.C.
•AC Fuse		
<Z-9000X>		
pF1	07189500	10A 250V (120V)
	07189100	5A 250V (220/240V)
<Z-7000X>		
pF1	07189300	7A 250V (120V)
	07188900	3.5A 250V (220/240V)
pRL1	46222200	Relay (RL1 1M)

3-5. F-3807 EQ. Amp. Circuit Board (Stock No. 00751301 = Z-9000X/00752501 = Z-7000X)

Component Side



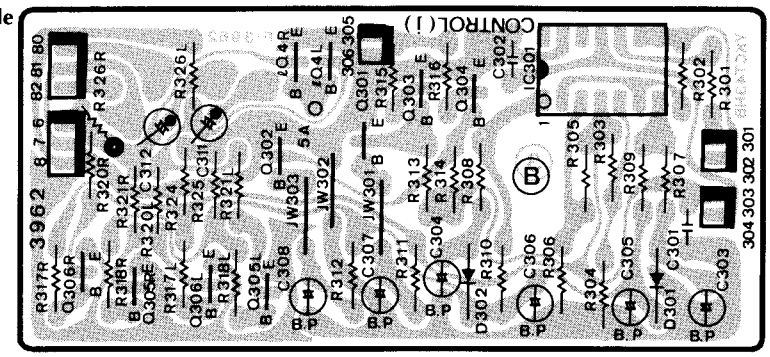
Parts List

Parts No.	Stock No.	Description
•IC		
iIC1	46288800	M5220L
•IC		
jIC101	07208900	NJM4558D-X <Z-9000X Only>
jIC102	07208900	NJM4558D-X <Z-9000X Only>
	46222100	Reverberation Unit HDR5103 <Z-9000X Only>
•Transistor		
IQ51	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
IQ52	46367001	2SA1115
IQ53	46367101	2SC2603
IQ101	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•Diode		
ID6	03117600	1S2473D
	or 46086000	1S1588
ID7	03117600	1S2473D
	or 46086000	1S1588
ID51	03117600	1S2473D
	or 46086000	1S1588
ID52	03117600	1S2473D
	or 46086000	1S1588
ID53	03117600	1S2473D
	or 46086000	1S1588

Parts No.	Stock No.	Description
•Transistor		
oQ3	46367001	2SA1115
oQ4	46367101	2SC2603
oQ5	46367001	2SA1115
oQ6	46367101	2SC2603
oQ7	46367001	2SA1115
oQ8	46367101	2SC2603
oQ9	46367001	2SA1115
oQ10	46367101	2SC2603
•IC		
oIC1	46255000	LC4066BH
oIC2	46255000	LC4066BH
oIC3	46255000	LC4066BH
•Diode		
oD1	03117700	10E-2
oD2	03117700	10E-2
oD3	03117700	10E-2 <Z-9000X Only>
oD4	03117700	10E-2
oRL1	11506200	Relay
oRL2	11506200	Relay
oRL3	11506200	Relay <Z-9000X Only>
oRL4	11506200	Relay
	46363800	4P Input Terminal Board, PHONO/AUX/TAPE-1/TAPE-2

3-6. F-3962 Volume Control Circuit Board (Stock No. 00758001 = Z-9000X/00751801 = Z-7000X)

Component Side



Parts List

Parts No.	Stock No.	Description
•Transistor		
jQ301	46367101	2SC2603
jQ302	46367101	2SC2603
jQ303	46367101	2SC2603
jQ304	46367101	2SC2603
jQ305	46367101	2SC2603
jQ306	46367101	2SC2603
•IC		
jIC301	46500800	NJM2058D
•Diode		
jD301	03117600	1S2473D
	or 46086000	1S1588
jD302	03117600	1S2473D
	or 46086000	1S1588

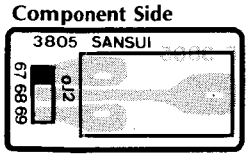
Parts No.	Stock No.	Description
jC303	08451700	1μF 50V E.B.
jC304	08451700	1μF 50V E.B.
jC305	08451000	10μF 16V E.B.
jC306	08451000	10μF 16V E.B.
jC307	08451200	2.2μF 25V E.B.
jC308	08451200	2.2μF 25V E.B.
•Transistor		
IQ4	03059501	2SC945
	or 07194801	2SC1815
	46363800	4P Input Terminal Board, PRE AMP OUT/POWER AMP IN

•Note: The circuit boards, F-3805 & F-3809 are not supplied as the assembled. However, the individual parts on the circuit boards are provided by orders.

3-7. F3805 PHONES Jack Circuit Board

<Z-9000X/Z-7000X>

Component Side



Parts List

Parts No.	Stock No.	Description
oJ2	46289200	Jack

3-8. F-3809 MIC Jack Circuit Board

<Z-9000X/Z-7000X>

Parts List

Parts No.	Stock No.	Description
oJ1	46133900	Jack

•Note: Concerning Printed Resistor and Printed Silver Pattern

In this model, printed circuit board is used on which carbon resine resistance and silver foil pattern are coated. And it is impossible to replace those parts. Therefore, please keep following procedures when repairing or ordering the parts.

1. When repairing the printed resistor, cut off center position of the resistor to make complete open circuit. Then solder 1/3 W type carbon resistor to conductor side of the PCB.
2. When repairing the printed silver pattern, solder lead wire to conductor side of the PCB.
3. When ordering the 1/3 W type carbon resistor, read the resistance value from the schematic diagram, and refer to "Common Parts List for Resistors and Capacitors".

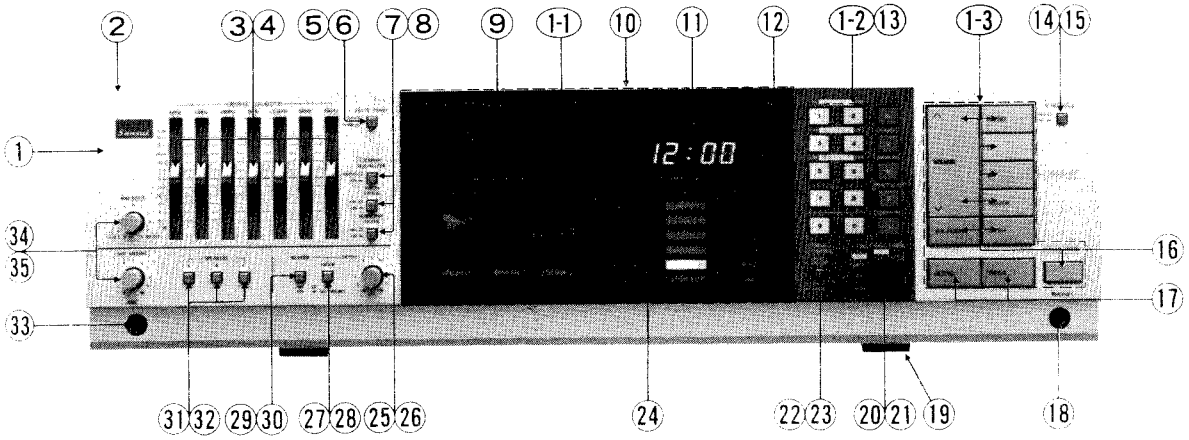
•Abbreviations

C.R.	: Carbon Resistor	E.B.	: Bi-Polar Electrolytic Capacitor
S.R.	: Solid Resistor	E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
Ce.R.	: Cement Resistor		
M.R.	: Metal Film Resistor	Ta.C.	: Tantalum Capacitor
F.R.	: Fusing Resistor	F.C.	: Film Capacitor
N.I.R.	: Non-Inflammable Resistor	M.P.	: Metalized Paper Capacitor
A.R.	: Array Resistor	P.C.	: Polystyrene Capacitor
C.C.	: Ceramic Capacitor	G.C.	: Gimmic Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation	A.C.	: Array Capacitor
		V.R.	: Variable Resistor
E.C.	: Electrolytic Capacitor	S.V.R.	: Semi Variable Resistor
E.L.	: Low Leak Electrolytic Capacitor	SW.	: Switch

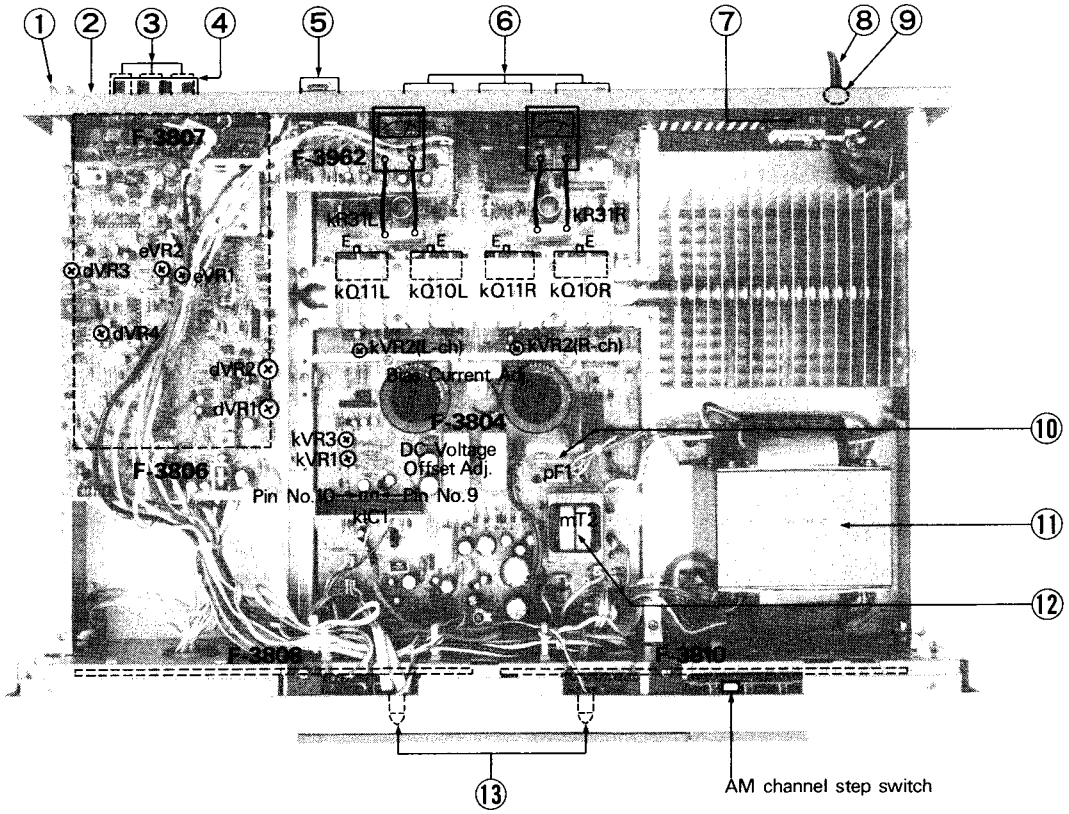
4. OTHER PARTS

4-1. Z-9000X

A) Front View

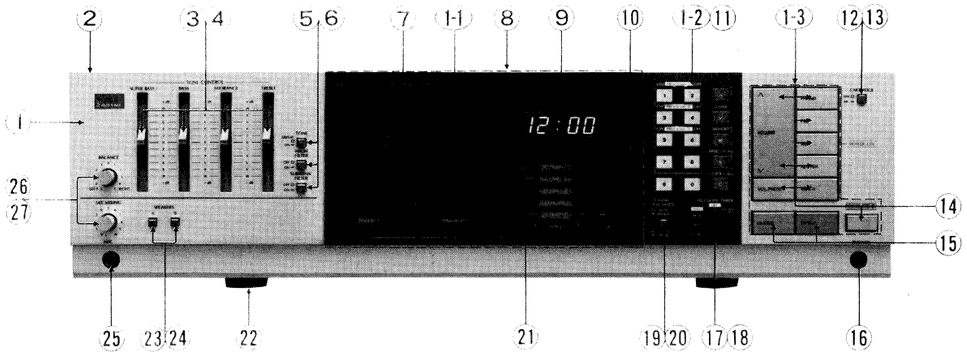


B) Top View

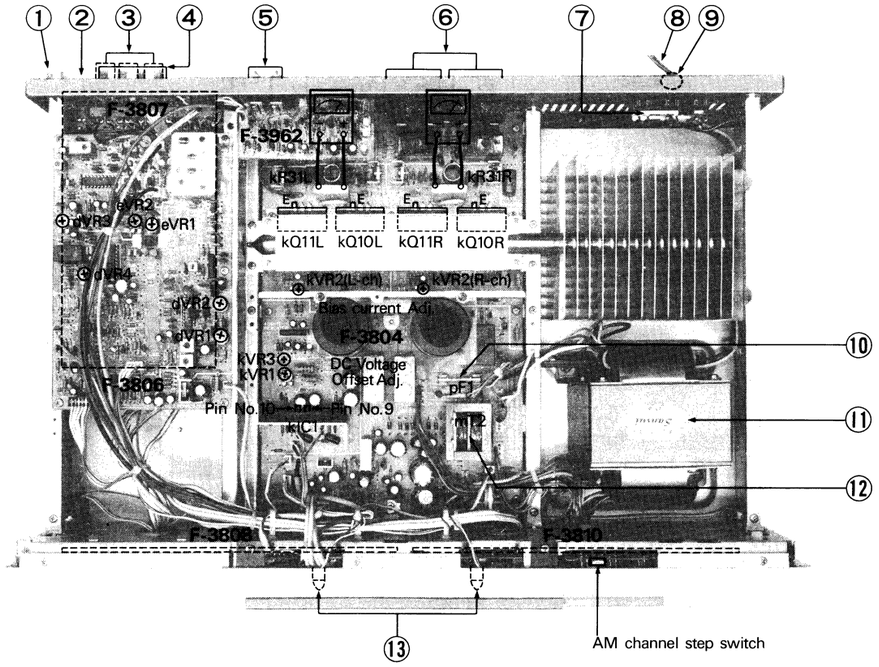


4-2. Z-7000X

A) Front View



B) Top View



●Parts List <Z-9000X>

<Front View>

Parts No.	Stock No.	Description
1	47245700	Front Panel Ass'y
1-1	47246800	Smoked Plate
1-2	47248000	15-Key Push Knob Ass'y
1-3	47248100	Selector Push Knob Ass'y
2	47246100	Bonnet Ass'y
3	07930100	Slide Knob, GRAPHIC EQUALIZER
4	46360500	50Ω×2 Slide VR, GRAPHIC EQUALIZER
5	07977500	Push Knob Ass'y, FM IF BAND
6	46360000	Push SW., FM IF BAND
7	07977500	Push Knob Ass'y, GRAPHIC EQUALIZER, HIGH FILTER, SUBSONIC FILTER
8	46360000	Push SW., GRAPHIC EQUALIZER, HIGH FILTER, SUBSONIC FILTER
9	46254100	FL Display Tube, VOLUME/PEAK POWER
10	47245900	Sub Panel Ass'y
11	46253900	FL Display Tube, FREQUENCY/ QUARTZ CLOCK
12	46166200	7-seg. LED, CHANNEL
13	46365200	Push SW., keyboard
14	07977500	Push Knob Ass'y, CARTRIDGE
15	46360000	Push SW., CARTRIDGE
16	11907000	Push SW., VOLUME, PHONO, POWER STD-BY etc.
17	46360000	Push SW., MUTING/TAPE-2
18	46289200	Jack, PHONES
19	07841700	Leg
20	07964100	Knob, PROGRAM TIMER
21	46364600	Rotary SW., PROGRAM TIMER
22	07977500	Push Knob Ass'y, TUNING/FM MODE
23	46360000	Push SW., TUNING/FM MODE
24	46359900	8V 0.1A Pilot Lamp
25	07964000	Knob, DEPTH
26	46362700	10kΩ (B)×2 V.R., DEPTH
27	07977500	Push Knob Ass'y, MODE MIC/SOURCE
28	46360000	Push SW., MODE MIC/SOURCE
29	07966500	Push Knob Ass'y, MIC/SOURCE
30	46360000	Push SW., REVERB ON/OFF
31	07977500	Push Knob Ass'y, SPEAKERS
32	46360000	Push SW., SPEAKERS
33	46133900	Jack, MIC
34	07964000	Knob, MIC MIXING, BALANCE
35	46362600	20kΩ and 50kΩ VR, MIC MIXING, BALANCE

<Top View>

Parts No.	Stock No.	Description
1	07193200	Antenna Holder
2	22301500	Ground Terminal
3	46363800	4P Input Terminal, PHONO, AUX, TAPE-1/-2
4	46364500	Antenna Terminal
5	46363800	4P Input Terminal, PREAMP OUT/POWER AMP IN
6	22902400	4P Speaker Terminal, SYSTEM-A, -B, -C
7	46360200	AC Outlet
8	38004900	Power Supply Cord
9	39104900	Strain Relief
10	07189500	10A 250V (120V) AC Fuse
	07189100	5A 250V (220/240V) AC Fuse
11	15013501	Power Transformer
12	15008511	Power Transformer
13	04006600	8V 150mA Pilot Lamp

●Parts List <Z-7000X>

<Front View>

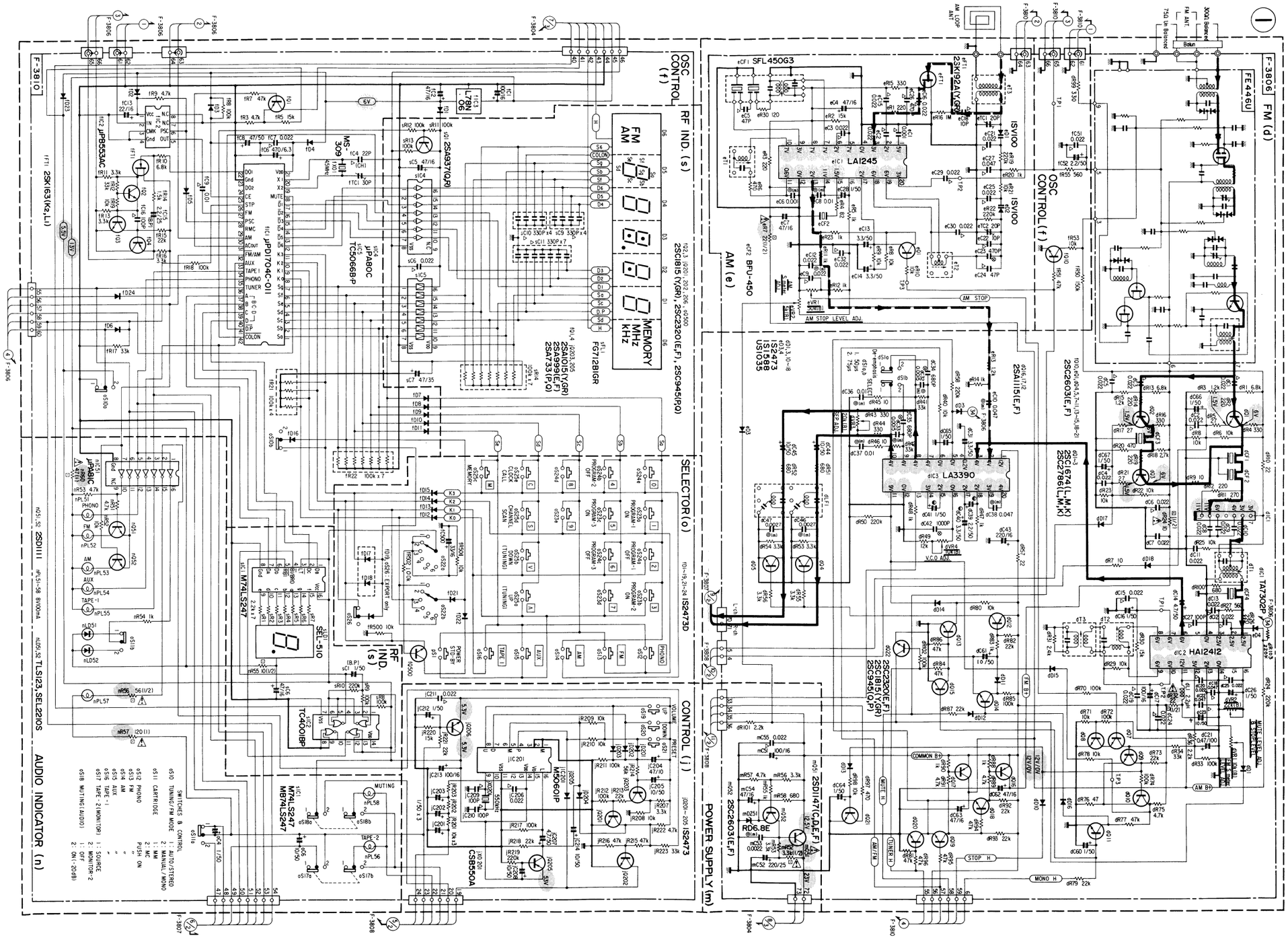
Parts No.	Stock No.	Description
1	47245800	Front Panel Ass'y
1-1	47246900	Smoked Plate
1-2	47248000	15-Key Push Knob Ass'y
1-3	47248100	Selector Push Knob Ass'y
2	47246100	Bonnet Ass'y
3	07930100	Slide Knob, TONE CONTROL
4	46360500	50kΩ×2 Slide VR, TONE CONTROL
5	07977500	Push Knob Ass'y, TONE, HIGH FILTER, SUBSONIC FILTER
6	46360000	Push SW., TONE, HIGH FILTER, SUBSONIC FILTER
7	46254100	FL Display Tube, VOLUME/PEAK POWER
8	47246000	Sub Panel Ass'y
9	46253900	FL Display Tube, FREQUENCY/ QUARTZ CLOCK
10	46166200	7-seg. LED, CHANNEL
11	46365200	Push SW., Keyboard
12	07977500	Push Knob Ass'y, CARTRIDGE
13	46360000	Push SW., CARTRIDGE
14	11907000	Push SW., VOLUME, PHONO, POWER STD-BY etc.
15	46360000	Push SW., MUTING/TAPE-2
16	46289200	Jack, PHONES
17	07964100	Knob, PROGRAM TIMER
18	46364600	Rotary SW., PROGRAM TIMER
19	07977500	Push Knob Ass'y, TUNING/FM MODE
20	46360000	Push SW., TUNING/FM MODE
21	46359900	8V 0.1A Pilot Lamp
22	07841700	Leg
23	07977500	Push Knob Ass'y, SPEAKERS
24	46360000	Push SW., SPEAKERS
25	46133900	Jack, MIC
26	07964000	Knob, MIC MIXING/BALANCE
27	46362600	20kΩ and 50kΩ (B) VR, MIC MIXING/BALANCE

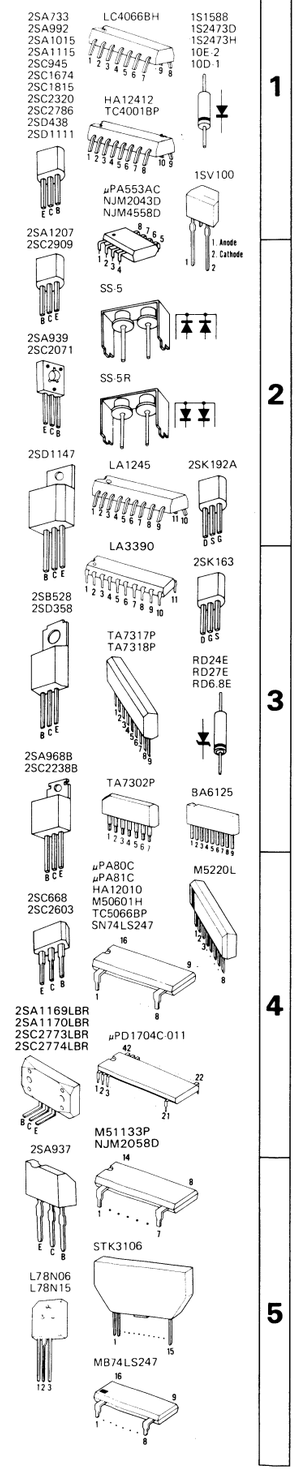
<Top View>

Parts No.	Stock No.	Description
1	07193200	Antenna Holder
2	22301500	Ground Terminal
3	46363800	4P Input Terminal, PHONO, AUX, TAPE-1, -2
4	46364500	Antenna Terminal
5	46363800	4P Input Terminal, PREOUT/ POWER AMP IN
6	22902400	4P Speaker Terminals, SYSTEM-A, -B
7	46360200	AC Outlet
8	38004700	Power Supply Cord
9	39106000	Strain Relief
10	07189300	7A 250V (120V) AC Fuse
	07188900	3.5A 250V (220/240V) AC Fuse
11	15013001	Power Transformer
12	15008511	Power Transformer
13	04006600	8V 150mV Pilot Lamp

5. SCHEMATIC DIAGRAM 5-1. Z-9000X Tuner & Control Section

*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.





FM Signal Line
AM Signal Line

5-2. Z-9000X EQ. Amp. & Tone Control Section

*Design and specifications subject to change without notice for improvement.
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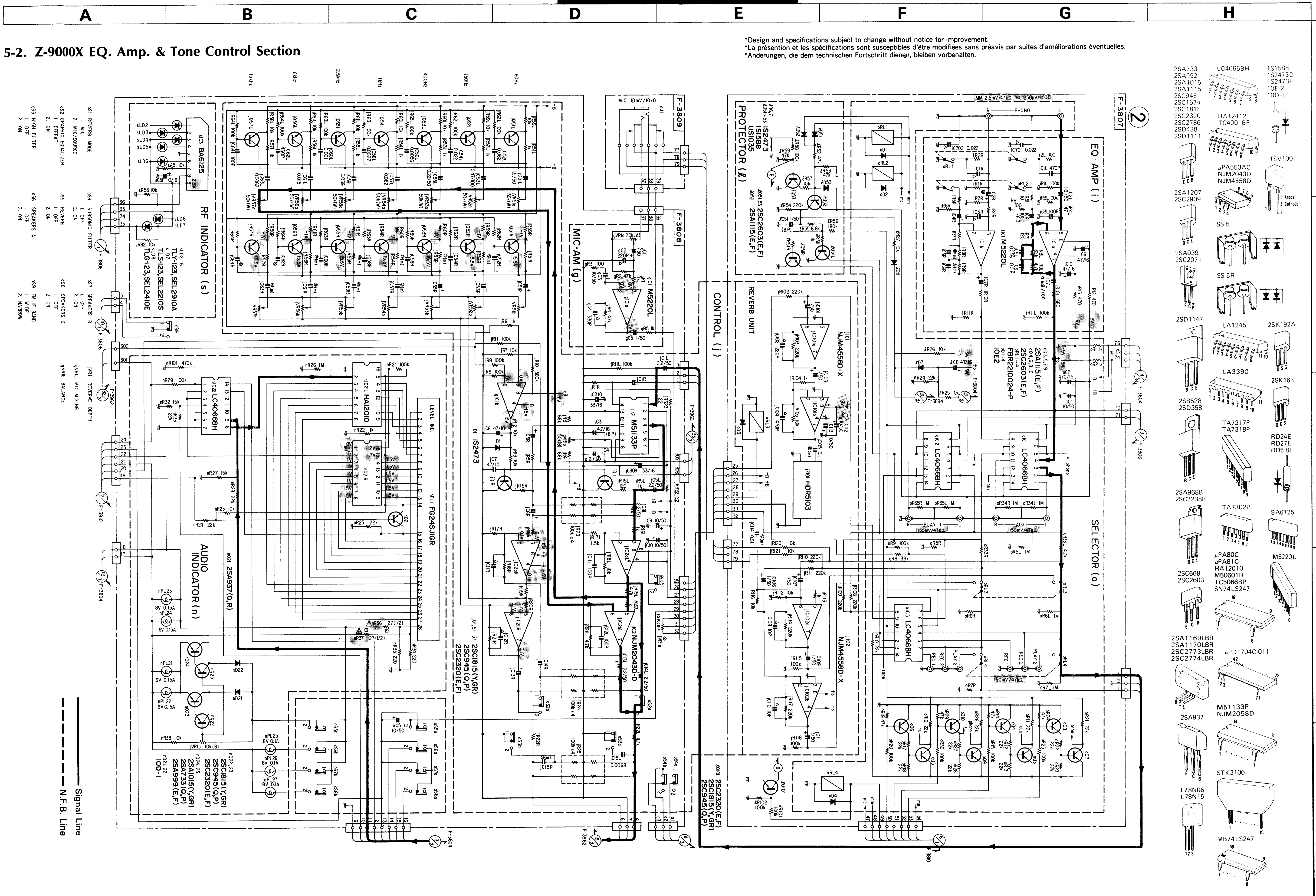
A B C D E F G H
1 2 3 4 5
oS1 REVERB MODE 1. MIC 2. MIC/SOURCE
oS2 GRAPHIC EQUALIZER 1. DEFEAT 2. ON
oS3 HIGH FILTER 1. OFF 2. ON
oS4 SUBSONIC FILTER 1. OFF 2. ON
oS5 REVERB 1. OFF 2. ON
oS6 SPEAKERS A 1. OFF 2. ON
oS7 SPEAKERS B 1. OFF 2. ON
oS8 SPEAKERS C 1. OFF 2 ON
oS9 FM IF BAND 1. WIDE 2. NARROW
jVR1 REVERVE DEPTH
gVR1a MIC MIXING
gVR1b BALANCE
15kHz 6kHz 2.5kHz 1kHz 400Hz 150Hz 60Hz
RF INDICATOR (s)
sIC3 BA6125
sLD2 6 TLY-123,SEL2910A
sLD7 TLS-123,SEL2210S
sLD8 TLG-123,SEL2410E
MIC-AM (g)
MIC 1.0mV/10kΩ
gIC1 M5220L
F-3809
F-3808
PROTECTOR (ℓ)
ℓD6,7 ℓD51~53 1S2473 1S1588 US1035
ℓQ51,53 2SC2603(E,F)
ℓQ52 2SA1115(E,F)
EQ·AMP (i)
MM 2.5mV/47kΩ, MC 250μV/100Ω
R PHONO L
iIC1 M5220L
F-3807
②
CONTROL (j)
jIC1 M51133P
jD1 1S2473
jQ1,51 57 2SC1815(Y,GR) 2SC945(Q,P) 2SC2320(E,F)
jIC2 NJM2043D-D
REVERB UNIT
jIC1 NJM4558D-X
jIC2 NJM4558D-X
jZ101 HDR5103
oQ3,5,7,9 2SA1115(E,F)
oQ4,6,8,10 2SC2603(E,F)
oRL1~4 FBR221D024-P
oD1~4 10E2
SELECTOR (o)
oIC1 LC4066BH
oIC2 LC4066BH
oIC3 LC4066BH
R PLAY 1 L 150mV/47kΩ
R AUX L 150mV/47kΩ
REC 1 REC 2 PLAY 2 150mV/47kΩ
nIC22 LC4066BH
nIC21L HA12010
nIC21R
LEVEL IND.
nFL1 FG24SJIGR
AUDIO INDICATOR (n)
nQ21 2SA937(Q,R)
nQ22,23 2SC1815(Y,GR) 2SC945(Q,P) 2SC2320(E,F)
nQ24,25 2SA1015(Y,GR) 2SA733(Q,P) 2SA999(E,F)
nD21,22 10D-1
ℓQ101 2SC2320(E,F) 2SC1815(Y,GR) 2SC945(Q,P)
F-3806 F-3962 F-3810 F-3804 F-3894
Signal Line
N.F.B. Line
2SA733 2SA992 2SA1015 2SA1115 2SC945 2SC1674 2SC1815 2SC2320 2SC2786 2SD438 2SD1111
LC4066BH
1S1588 1S2473D 1S2473H 10E·2 10D·1
HA12412 TC4001BP
2SA1207 2SC2909
μPA553AC NJM2043D NJM4558D
1SV100
1. Anode 2. Cathode
SS·5
2SA939 2SC2071
SS·5R
2SD1147
LA1245
2SK192A
LA3390
2SK163
2SB528 2SD358
TA7317P TA7318P
RD24E RD27E RD6.8E
2SA968B 2SC2238B
TA7302P
BA6125
2SC668 2SC2603
μPA80C μPA81C HA12010 M50601H TC5066BP SN74LS247
M5220L
2SA1169LBR 2SA1170LBR 2SC2773LBR 2SC2774LBR
μPD1704C-011
2SA937
M51133P NJM2058D
STK3106
L78N06 L78N15
MB74LS247

5-3. Z-9000X Power Amp. & Power Supply Section

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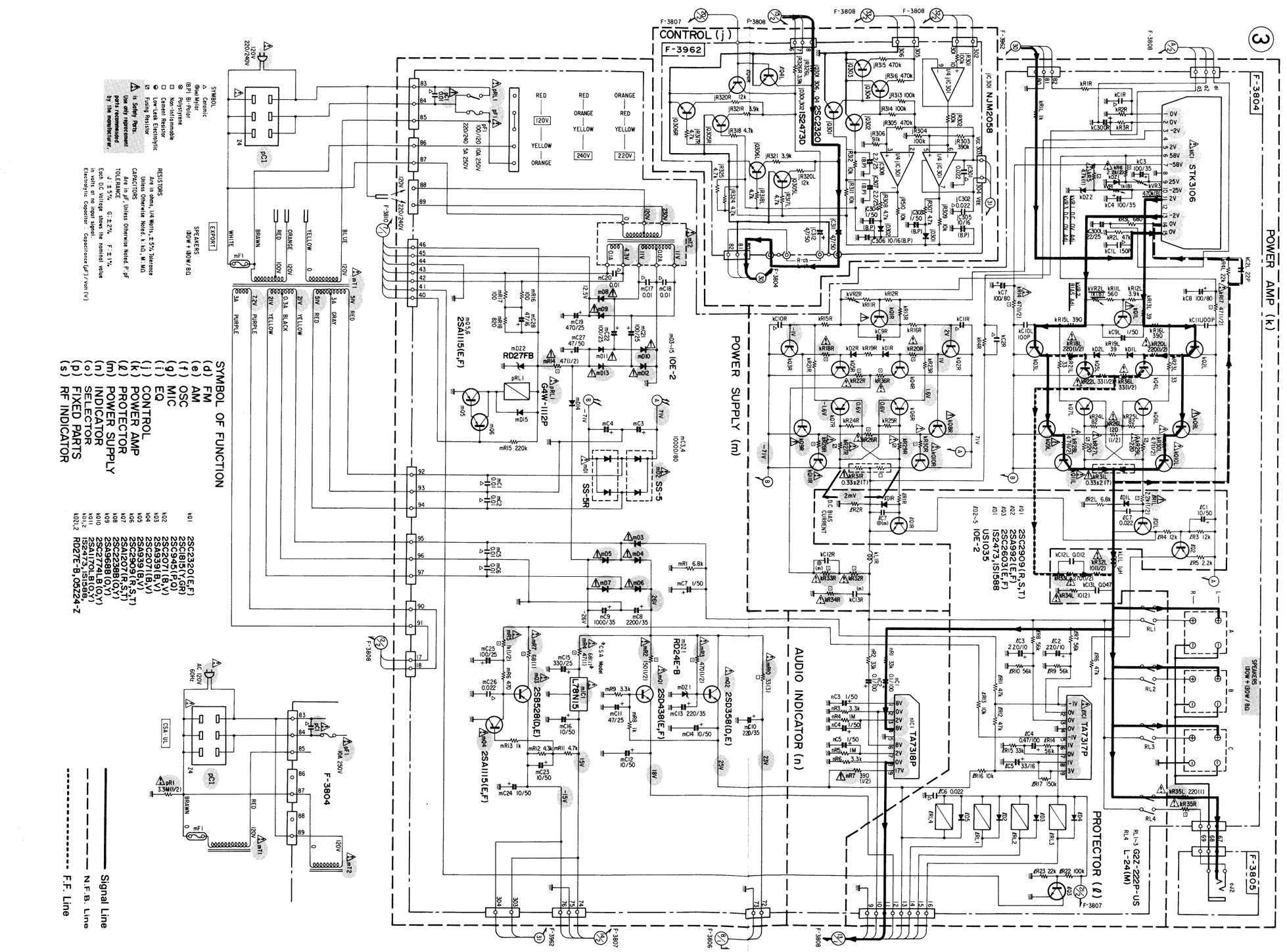
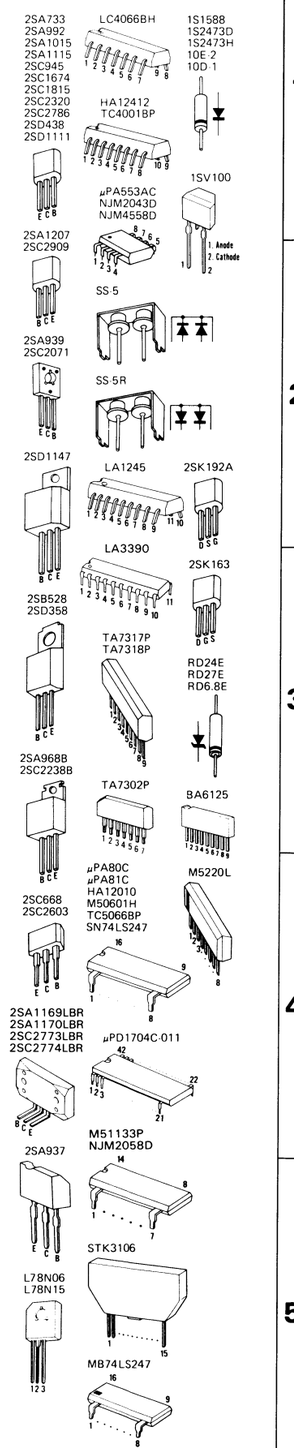
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.





A	B	C	D	E	F	G	H

5-4. Z-7000X Tuner & Control Section

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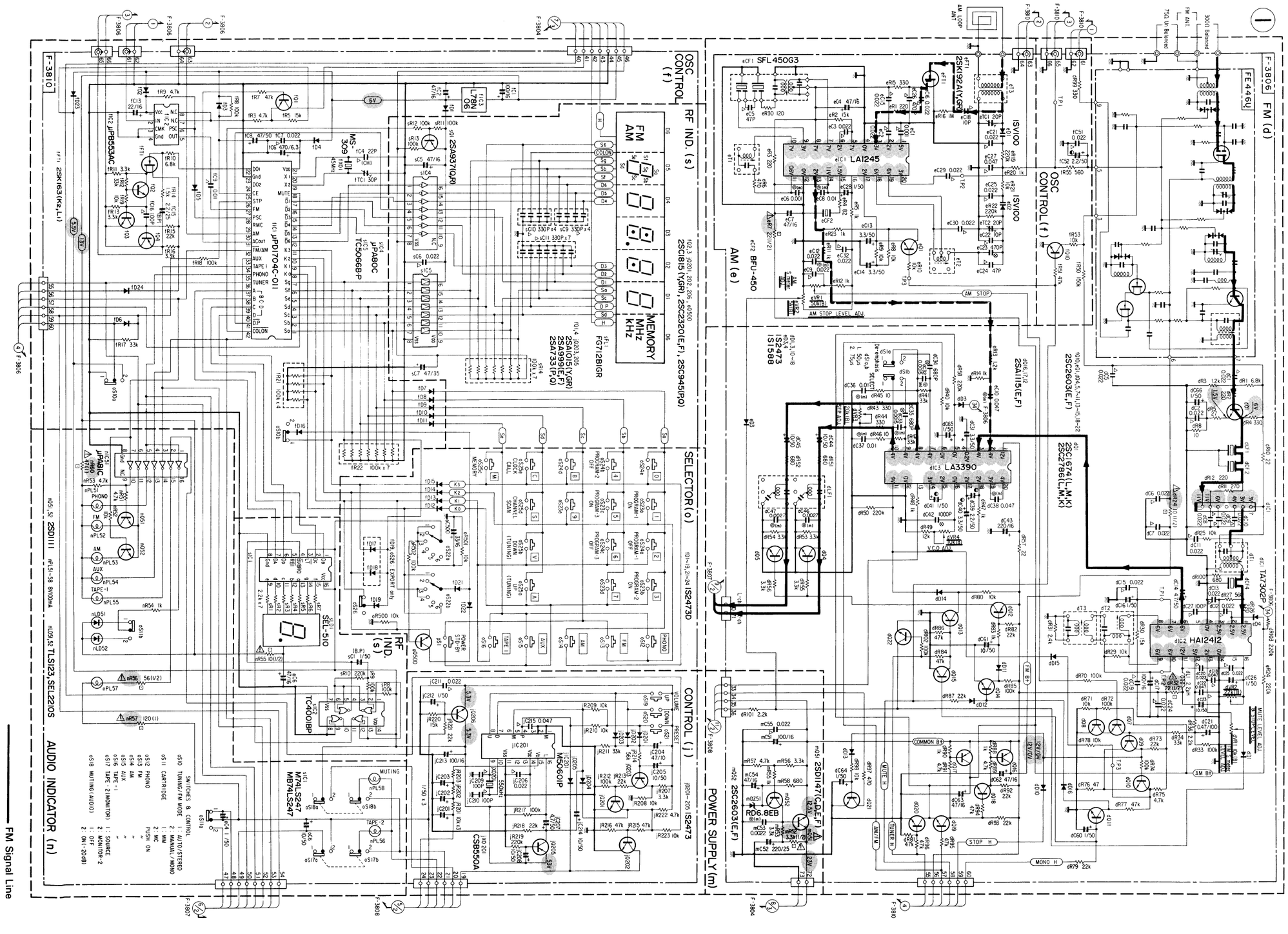

A	B	C	D	E	F	G	H

5-5. Z-7000X EQ. Amp. & Control Section

*Design and specifications subject to change without notice for improvement.
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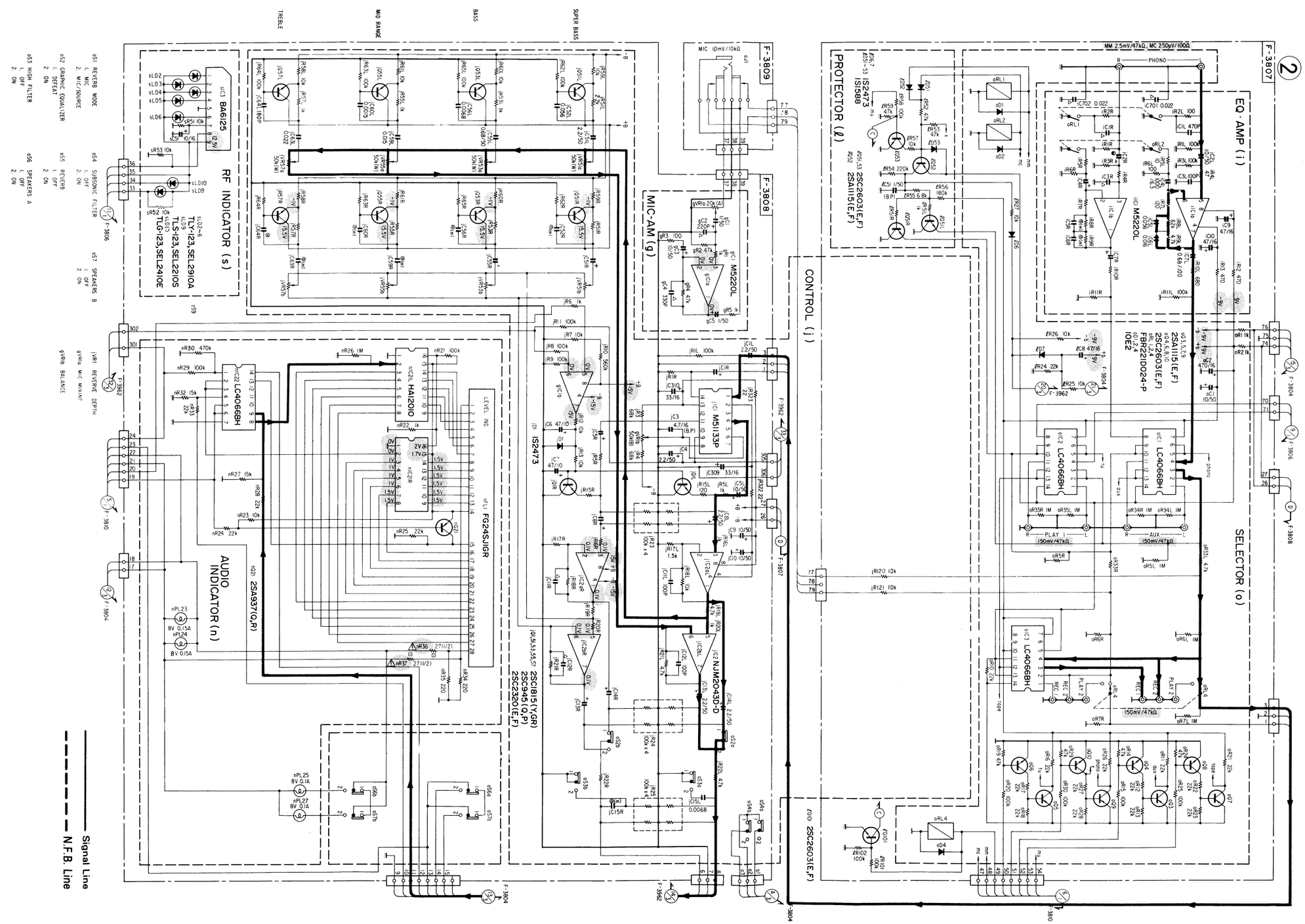

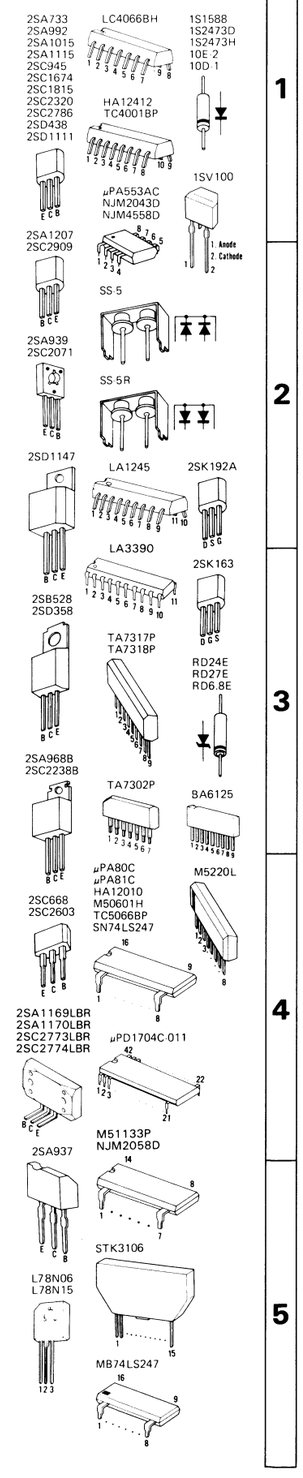

1 2 3 4 5

A	B	C	D	E	F	G	H

5-6. Z-7000X Power Amp. & Power Supply Section

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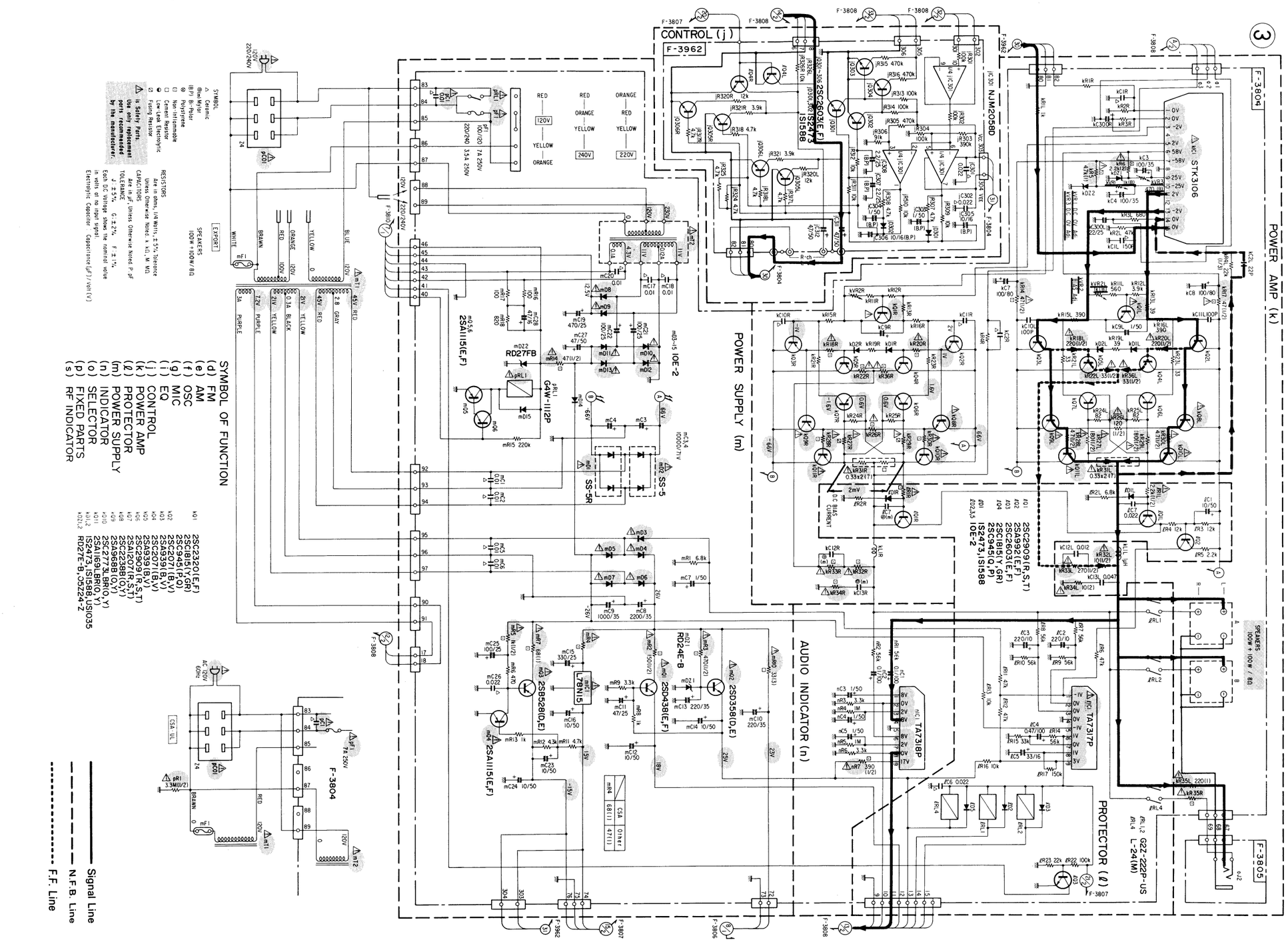
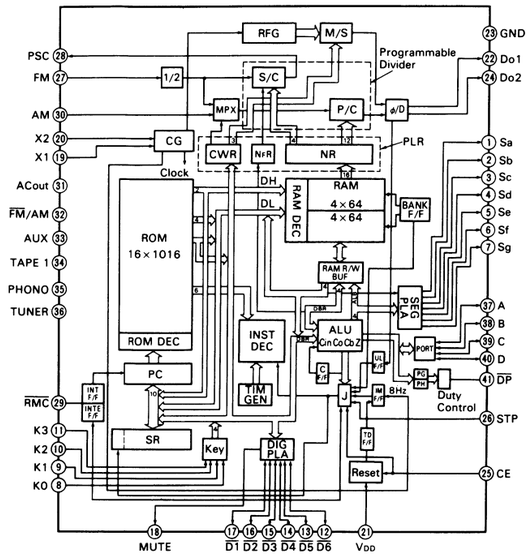


2SA733 2SA992 2SA1015 2SA1115 2SC945 2SC1674 2SC1815 2SC2320 2SC2786 2SD438 2SD1111
LC4066BH
1S1588 1S2473D 1S2473H 10E2 10D1
HA12412 TC4001BP
2SA1207 2SC2909
1SV100
μPA553AC NJM2043D NJM4558D
1. Anode 2. Cathode
SS-5
2SA939 2SC2071
SS-5R
2SD1147
LA1245
2SK192A
LA3390
2SK163
2SB528 2SD358
TA7317P TA7318P
RD24E RD27E RD6.8E
2SA968B 2SC2238B
TA7302P
BA6125
2SC668 2SC2603
μPA80C μPA81C HA12010 M50601H TC5066BP SN74LS247
M5220L
2SA1169LBR 2SA1170LBR 2SC2773LBR 2SC2774LBR
μPD1704C-011
M51133P NJM2058D
2SA937
STK3106
L78N06 L78N15
MB74LS247

6. INTERIOR BLOCK DIAGRAM OF IC & TERMINAL FUNCTION OF μPD1704C-011

●μPD1704C-011 (FM/AM PLL Synthesizer & Control IC)



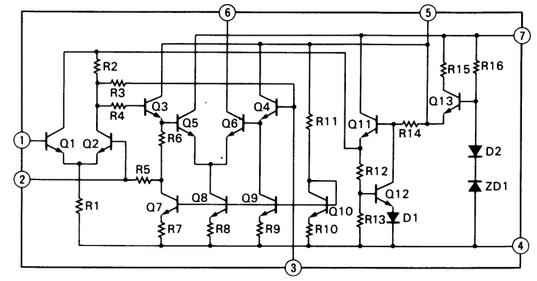
***The discription of IC/μPD1704C-011 are omitted from this manual expect terminal function, therefore please refer to the service manual Z-9000/7000.**

● Terminal Function of μPD1704C-011

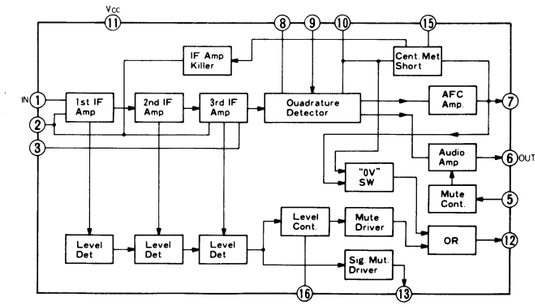
Terminal Nos.	Terminal Symbols	Terminal Name	Description
1~7	Sa~Sg	Segment Output	Terminals for outputting indicator digit segment signals and a key return signal source. High level when active.
8~11	K_0~K_3	Key Return Signal	Terminals for inputting a key return signal from externally connected key matrix. The key return signal source is an ANDed signal of segment terminals Sa to Sg and tuner and phono terminals.
12~17	D_1~D_6	Digit Outputs	Terminals for outputting indicator digit signals. Low level when active.
18	MUTE	Mute	Terminal for outputting a muting signal to eliminate shock noise generated when PLL is unlocked. High level when active. This muting signal is kept outputted for 55 ms before and after PLL data (contents in the programmable counter) change. The muting signal is outputted in the following modes: * In AM/FM and selector switching * In MANUAL UP/DOWN * In AUTO UP/DOWN * In preset memory access (including preset scanning) * In switching from CLOCK set to OFF mode
19, 20	X_1, X_2	X'tal	Terminals for connecting a 4.5 MHz quartz oscillator.
21	VDD	VDD	Terminal for a power supply for a device.
22 24	DO_1 DO_2	Error Out	Terminals for outputting signals from a phase detector which configures PLL. High level when the divided oscillator frequency is higher than the reference frequency. Low level when the divided one is lower than the reference one.
23	GND	Ground	Terminal connected to ground.
25	CE	Chip Enable	Terminal for inputting a device is used for the ordinary operations. Low level when no device is used. (1) When NONCLOCK is preset by an initializing diode matrix: CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative. Internal clock generator is inoperative. (2) When NONCLOCK is not preset by an initializing diode matrix: CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative.
26	SD	Station Detector	Terminal for inputting a signal to detect whether or not a station is received in automatic tuning (AUTO UP/DOWN). Automatic tuning stops when at high-level. However, it is necessary to input a High level signal within 50 ms after PLL has been locked.
27	FM	FM Local Oscillator Signal Inputs	Terminal for input a signal from FM programmable counter. The inputted signal is obtained by dividing an output signal from FM local oscillator (VCO) into 1/16 or 1/17 through prescaler μPB553AC.
28	PSC	Prescaler Control	Terminal for outputting a signal to change the division ratio of prescaler in FM. This terminal is connected to PSC terminal of prescaler μPB553AC. Selectable division ratios are 1/16 and 1/17 in μPB553AC.
29	RMC	Remote Control Inputs	Terminal for inputting a remote control signal. Not now in use.
30	AM	AM Local Oscillator Signal Inputs	Terminal for inputting a signal from AM programmable counter. The inputted signal is one outputted from AM local oscillator (VCO).
31	AC OUT	AC Outlet Control	Terminal for AC outlet. The AC outlet is used for energizing a relay to break the main power supply for the set. High level when any of selection terminals (TUNER, PHONO, TAPE-1, and AUX) is on. Low level when STD-BY key is depressed.
32	FM/AM	FM/AM Power Supply Control	Terminal for switching the power supply for FM section to that for AM section or vice versa in tuner. Low level in FM. High level in AM.
33 34 35 36	AUX TAPE-1 PHONO TUNER	AUX TAPE-1 PHONO TUNER	Terminals for selecting TUNER, PHONO, TAPE-1 and AUX. TUNER terminal is at a High level when FM/AM key or preset key is depressed; PHONO, TAPE-1, AUX terminals are at a High level when PHONO key, TAPE-1 key or AUX key is depressed respectively. Further, all terminals change to a Low level when STD-BY key is depressed.
37~40	A~D	Preset Station Indicator Outputs	Terminals for outputting preset station indicator BCD signals. The output BCD signals corresponding to the preset stations are listed below:
41	DP	DECIMAL POINT	Terminal for outputting a decimal point indication signal in FM frequency indication. Low level when active.
42	COLON	COLON	Terminal for outputting a COLON indication signal in CLOCK indication. Low level when active.

PRESET STATION	D	C	B	A
No channel designation	0	0	0	0
P1	0	0	0	1
P2	0	0	1	0
P3	0	0	1	1
P4	0	1	0	0
P5	0	1	0	1
P6	0	1	1	0
P7	0	1	1	1
P8	1	0	0	0

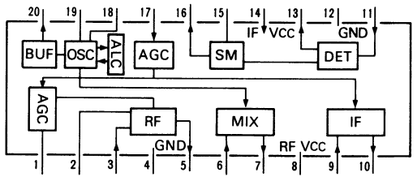
●TA7302P (FM IF Amp. IC)



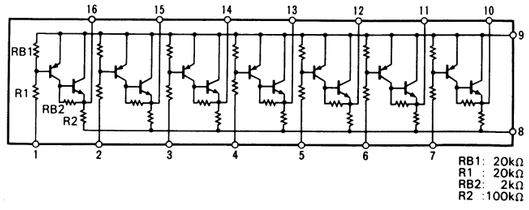
●HA12412 (FM Detector IC)



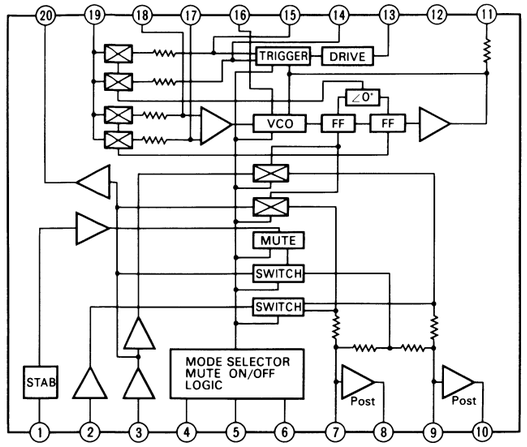
●LA1245 (AM Tuner IC)



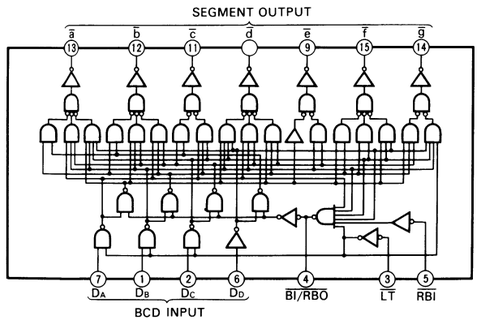
●μPA80C (FL Display Drive IC)



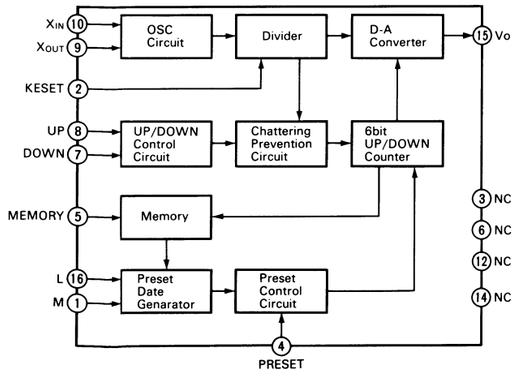
•LA3390 (MPX Decoder IC)



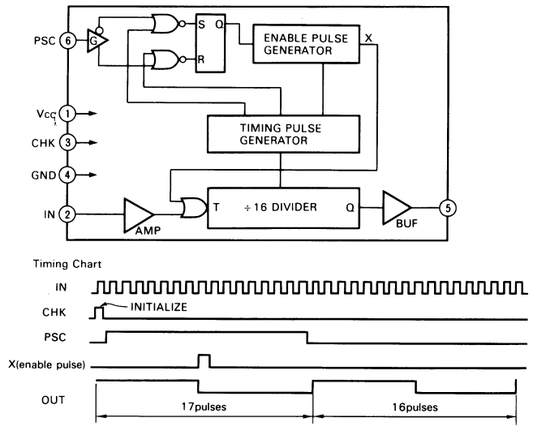
•M74LS247/MB74LS247 (BCD-TO-SEVEN SEGMENT DECODER/DRIVER IC)



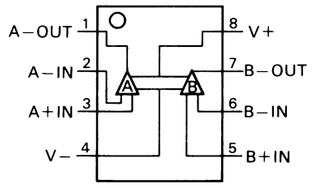
•M50601P (D-A Converter IC)



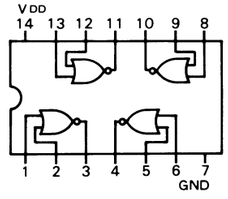
•μPB553AC (Prescaler IC)



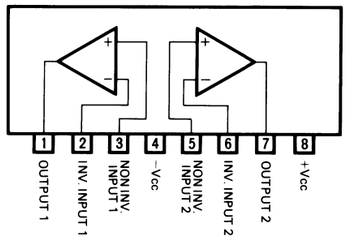
•NJM4558D-X/NJM2043D (Operational Amp.IC)



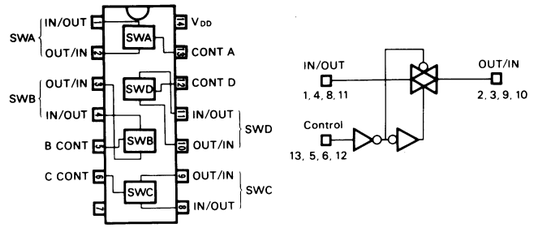
•TC4001BP (Quad NOR1～4IC)



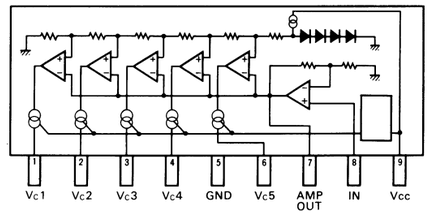
•M5220L (Audio Pre Amp. IC)



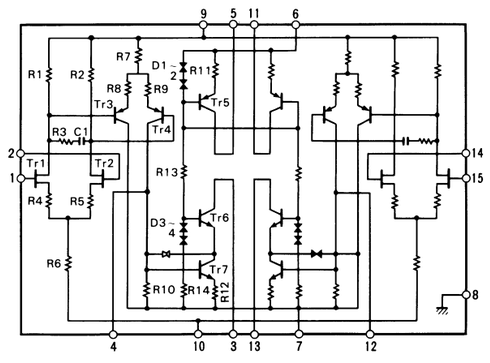
•LC4066BH (Quad Bi-lateral Switch IC)



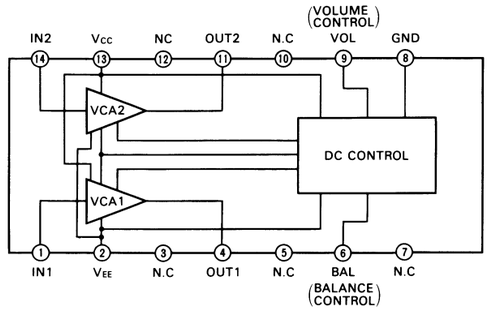
•BA6125 (L.E.D. Drive IC)



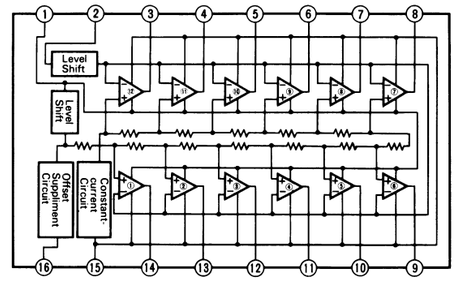
•STK3106 (Pre Drive IC)



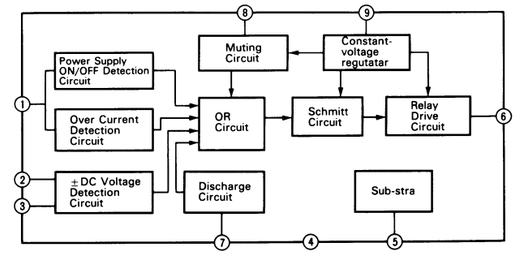
•M51133P (Electronic Volume IC)



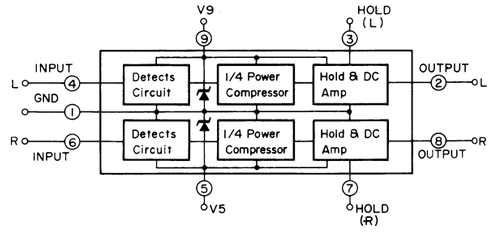
•HA12010 (FL Display Tube Drive IC)



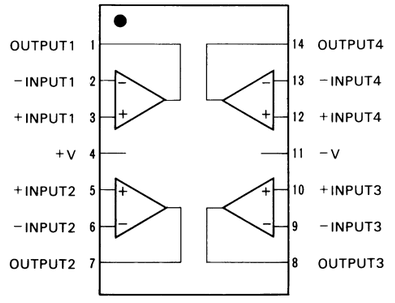
•TA7317P (Speaker Protector IC)



•TA7318P (Meter Drive IC)



•NJM2058D (Operational Amp. IC)



7. NOTES

7-1. Notice when the user moves from 9 kHz to 10 kHz step area, or vice versa, in AM broadcasting frequency

- AM programs are being broadcast under channel plans which, depending on the broadcasting area in the world, are characterized by different channels (frequency intervals) between broadcasting stations. In North, South, and Central America, this channel is 10 kHz whereas in the rest of these areas, it is 9 kHz.
  This unit is synthesizer tuner which varies the reception frequency at each 9 kHz or 10 kHz channel (frequency interval) during auto search reception. If the client uses the unit in an area with a different channel plan, he may not be able to receive AM stations. The unit he has purchased has been originally adjusted to the channel in his area. It is therefore necessary to change over the channel setting if he moves to an area with a different channel plan. It is impossible to receive AM broadcasting in Automatic Tuning operation. In this case, use the AM 9/10 kHz channel step switch (oS26, see Fig. 2-1 on page 3) installed on the circuit board F-3810.

7-2 Notice when the user moves from 200 kHz to 50 kHz step area, or vice versa, in FM broadcasting frequency.

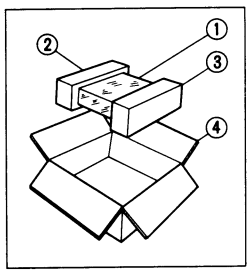
- When the frequency-step of AM broardcasting is set to 10 kHz or 9 kHz (in EUROPE) by sliding the AM 9/10 kHz channel step switch (oS26) installed on the circuit broad F-3810, the frequency-step of FM broadcasting is also switched automatically to 200 kHz or 50 kHz (in EUROPE).

Switch (oS26)	AM	FM
Set 10 kHz	10 kHz Frequency Step	200 kHz Frequency Step
Set 9 kHz	9 kHz Frequency Step	50 kHz Frequency Step

- Disconnect the AC power plug from the AC outlet, when AM 9/10 kHz channel step switch (oS26) is set 9 kHz or 10 kHz.

8. PACKING LIST

Parts No.	Stock No.	Description
1	91167430	Vinyl Cover
2	07973800	Styrofoam Packing (L)
3	07973900	Styrofoam Packing (R)
4	47247400	Carton Case <Z-9000X>
	47247500	Carton Case <Z-7000X>



9. ACCESSORY LIST

Stock No.	Description
46051700	FM Antenna
07272400	AM Loop Antenna
07563000	AM Antenna Holder
46686800	Operating Sheet
46607000	Operating Instruction <Z-9000X>
46607100	Operating Instruction <Z-7000X>